

Field Guide to Montana's Wetland Vascular Plants

A non-technical
key to the genera
with keys to the
species of sedges
and rushes



Peter Lesica and Peter Husby

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**A non-technical key to the genera with keys to the
species of sedges and rushes**

by

Peter Lesica
Missoula, Montana

and

Peter Husby
USDA Natural Resources Conservation Service
Bozeman, Montana

Illustrations by Jeanne Janish and John H. Rumely

Published by
Montana Wetlands Trust
Helena, Montana

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Major funding was provided by a 104(b)3 grant from the U.S. Environmental Protection Agency through the Montana Department of Environmental Quality Wetlands Program. Publishing was sponsored by the Lewis and Clark Conservation District.

Peter Husby's participation was funded by the USDA Natural Resources Conservation Service. USDA is an equal opportunity provider and employer.

Additional funding by:

Conservation Biology Research

Land and Water Consulting

Montana Audubon

Montana Riparian and Wetlands Association

Montana Wetlands Trust

Pamala R. Hackley, Professional Wetlands Scientist

Riparian Resources

Robert Peccia & Associates

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Additional copies may be ordered from:

Montana Department of Environmental Quality, Attn: Wetlands Program,
1520 E. Sixth Avenue, Helena, MT 59620; 406-444-6652; lsaul@state.mt.us

or

Natural Resources Conservation Service, Attn: Public Affairs, Federal Building Room 443, 10 E.
Babcock Street, Bozeman, MT 59715-4704; 406-587-6842; lvaladez@mt.usda.gov.

The publication can also be downloaded at the following website: <http://nr.is.state.mt.us/wis/MWICedit.html>

Cover photo of wetlands on the Blackfeet Indian Reservation © by Peter Lesica

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Acknowledgments

This manual began as a teaching aid for a class we taught on wetland plant identification. We are grateful to our many students whose comments helped improve the keys. Dave Heilig, Lynda Saul, and Charles Van Hook were instrumental in securing funding for the project. The excellent illustrations of Jeanne Janish and John H. Rumely were used by permission from University of Washington Press.

Introduction

Wetlands are important for protecting water quality and quantity as well as conserving biological diversity in arid western landscapes. They provide essential habitat for numerous species of plants and animals. During the last century wetlands were lost to agricultural, industrial, and residential development at an alarming rate. Recently enacted laws and regulations are aimed at protecting our remaining wetlands. In addition, many private organizations are striving to conserve wetlands for future generations.

We must be able to identify and classify wetlands in order to conserve them. Wetland delineation and classification depends, among other things, on knowledge of wetland plants. Identifying plants, especially wetland plants, has long been the domain of botanists who employ manuals and keys rife with technical jargon. Many of these floristic manuals are excellent sources of information, but they can be difficult for all but botanical specialists to use. Furthermore, most manuals require that plants be in flowering condition for identification. The keys in this manual emphasize easy-to-recognize vegetative characters described in non-technical terms. These keys will make it easier for land managers, field biologists and amateur botanists to correctly identify wetland plants. In addition, the emphasis on vegetative characters often allows identification even when plants are not in flower, prolonging the season during which determinations are possible.

Geographic Area

This manual covers the entire state of Montana. The eastern one-third of the state is in the U.S. Fish and Wildlife Service's (USFWS) North Plains Region (Region 4), while the western two-thirds of the state are in USFWS's Northwest Region (Region 9). The wetland indicator categories for plants in these two regions are given in Appendix A.

Wetland plants generally occur in habitats that receive more moisture than the typical upland site in the same area. This may be ponded surface water from rain or melted snow or shallow groundwater (palustrine) or groundwater associated with a permanent stream (riverine) or lake (lacustrine). Wetland habitats can be characterized by (1) the relative amount of extra moisture received, (2) whether the soil is derived mainly from geologic parent material (mineral) or dead plants (organic), and (3) whether the dominant vegetation is woody or not. Habitats include wet meadows (little extra moisture, dominated by herbaceous plants on mineral soil), forests or woodlands (little extra moisture, dominated by woody plants on mineral soil), marshes (much extra moisture, dominated by herbaceous plants on mineral soil), swamps (much extra moisture, dominated by woody plants on mineral soil), fens (much extra moisture, dominated by herbaceous plants on organic soil), and carrs (much extra moisture, dominated by woody plants on organic soil). Usually habitats receiving a great deal of extra moisture will be dominated by obligate wetland plants, while facultative wetland plants will be more common in drier habitats or on the edge of wetter ones (see below).

What plants are included

This manual includes only vascular plants; algae, mosses and liverworts are not included. We have chosen to follow the designation of plants in wetland indicator categories proposed by Porter Reed of the U.S. Fish and Wildlife Service. We obtained plant lists for Region 4 and Region 9 from the USFWS internet site in

Introduction

August, 2000. The website can be reached at www.nwi.fws.gov/ecology.html. We included all genera of plants known to occur in Montana according to Dorn's *Vascular Plants of Montana* in the following wetland indicator categories in either Region 4 or Region 9:

Obligate Wetland (OBL); >99% occurrences in wetlands

Facultative Wetland (FACW, FACW+, FACW-); 67-99% occurrences in wetlands

Facultative (FAC, FAC+); 34-66% occurrences in wetlands

Plants in Facultative (FAC-), Facultative Upland (FACU, FACU-, FACU+) and Obligate Upland (UPL) categories in both Region 4 and Region 9 are not included. Plants that are not indicators (NI) in both regions are not included. Plants that have not been assigned to a wetland indicator category (—) are not included. We have included a small number of species that often occur in wetlands in Montana even though they are not considered wetland species by USFWS (e.g., *Haplopappus integrifolius*).

Plants occurring exclusively at high elevations (near or above treeline) are included in the list of Montana wetland plants (Appendix A), but some of these are not included in the keys. These species will rarely be encountered by people doing wetlands inventory or delineation work, so they have been omitted to shorten the keys.

Taxonomic considerations

The scientific names of plants are in a state of flux. It is common for a plant to have different names in different floristic manuals, especially if a good deal of time has elapsed between the publication of the manuals. We have chosen to follow Porter Reed's taxonomic nomenclature published in the USFWS's National List of Plant Species that Occur in Wetlands. By doing so we hope to avoid confusion over a plant's status as a wetland indicator. We have included a short list of common taxonomic synonyms at the end of Appendix A that addresses discrepancies between the USFWS list and Dorn's **Vascular Plants of Montana**, the **Flora of the Great Plains** and the **Flora of the Pacific Northwest**. Names of genera that differ in one of these three manuals are followed by "(syn)" in our key. We have also chosen to use the common names provided in the USFWS's National List.

How To Use This Manual

The keys in this manual are meant to be used with a regional floristic manual, not in place of one. Once a plant has been keyed to genus in this manual, one of the floristic manuals listed below must be consulted in order to key the plant to species (a key to the wetland species of *Carex* and *Juncus* is provided in this manual). Positive identification can only be assured after comparing the specimen with descriptions in a floristic manual. Floristic manuals appropriate for Montana are:

Dorn, R.D. 1984. *Vascular plants of Montana*. Mountain West Publishing, Cheyenne, WY. A good, inexpensive, lightweight key to species but lacks illustrations and descriptions. Habitat descriptions are poor. Covers the whole state.

Great Plains Flora Association. 1986. *Flora of the Great Plains*. University Press of Kansas, Lawrence. Keys and description of species are good. No illustrations. Covers the eastern one-half of the state.

Hitchcock et al. 1955-69. *Vascular plants of the Pacific Northwest*. Parts 1-5. University of Washington Press, Seattle. Taxonomic nomenclature is out of date, and the books are expensive. The descriptions are excellent, and each species is beautifully illustrated. Keys are good. Covers the western two-thirds of the state.

Hitchcock, C. L. and A. Cronquist. 1973. *Flora of the Pacific Northwest*. University of Washington Press, Seattle. Taxonomic nomenclature is somewhat out of date. Keys and descriptions of species and habitats are good. Small illustrations for each species. Covers the western two-thirds of the state.

Upland species not covered by this manual sometimes occur in wetlands. If you key one of these upland plants in this manual, you will arrive at a genus, albeit incorrect. However, this misidentification will often only become apparent after comparing the specimen to descriptions or illustrations. **Keying a plant is only the first step in identification. Presumed determinations must be checked.**

This manual is meant to be used in the field with fresh specimens. It will be more difficult to use with dried, pressed specimens. Odor may be an important character that can be lost with drying. Shapes of stems and fruits may be distorted with pressing. It may sometimes be necessary to use a 10 x hand lens to observe small characters. It is always good to take measurements from more than one specimen if possible. Aberrant specimens occur in most populations and the vegetative characters used in this manual are more variable than the floral characters used in more technical treatments.

Plants are identified by means of “dichotomous keys.” A “couplet” (a pair of statements with identical numbers; e.g., 1a and 1b) consists of two alternate, mutually exclusive statements. The reader must choose the statement that best describes the plant in hand. Start with the first couplet. At the end of the correct statement is either the name of the genus the plant belongs to or the number of another couplet. For example:

- 1a. Leaves reduced to scales or lacking; stems red and succulent. *Salicornia*
- 1b. Leaves apparent; stems usually not red and succulent..... 2

If 1a is correct then the plant is in the genus *Salicornia*. If 1b is correct then the reader must go to the second couplet (beginning with 2) and again choose the correct statement and continue until a name rather than a number is obtained. This is probably the name of the genus your plant belongs to. Always read both statements of the couplet. The illustrations will aid in this process (illustrations for a few genera were not available). A floristic manual with keys to species and descriptions is then employed to make a positive identification (see above). A small number of abbreviations are used in the keys and descriptions: > – greater than, more than; ≥ – greater than or equal to; < – less than, fewer than; ≤ – less than or equal to.

Non-Technical Key to Montana's Wetland Vascular Plant Genera

Inexperienced users may have difficulty distinguishing the difference between leaves and leaflets. A leaflet is a division of a compound leaf. Leaves are attached to stems that have a bud at the tip; leaflets are attached to the axis (rachis) of a compound leaf, which has a leaflet or coiled tendril at the tip instead of a bud.

- 1a. Plants emergent; stems rigid with at least upper portions held above water; sometimes growing with the base of the plant in water but more often the plant growing in moist to saturated soil that is not inundated during most of the growing season 2
- 1b. Plants truly aquatic, submergent or with leaves and stems floating on the water's surface; stems usually weak and unable to support the plant without the aid of the water (*Chara*, algae of hard water with reddish, spherical nodes along its branches may appear to be a vascular plant) Key 1 (p. 2)

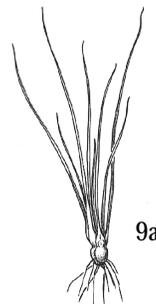
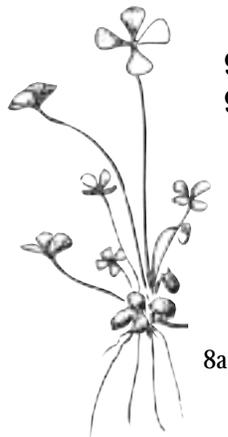
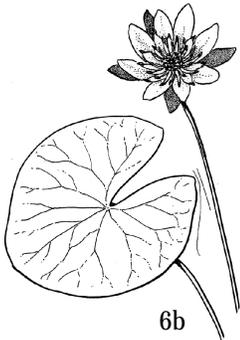
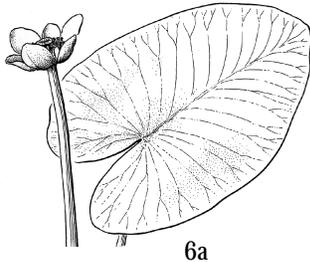
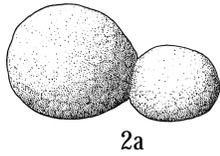
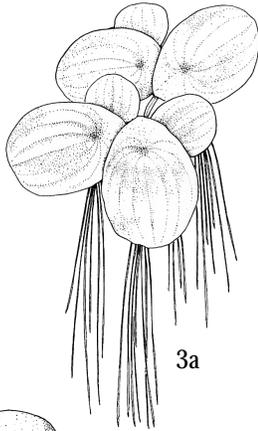
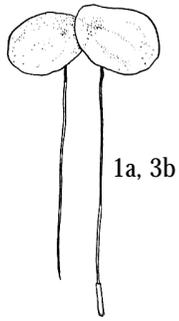
- 2a. Shrubs or trees with perennial woody stems Key 2 (p. 6)
- 2b. Annual or perennial herbaceous plants with stems that die back to the ground every year 3

- 3a. Plants not producing flowers; horsetails, ferns, fern allies Key 3 (p. 10)
- 3b. Plants producing flowers (flowering plants) 4

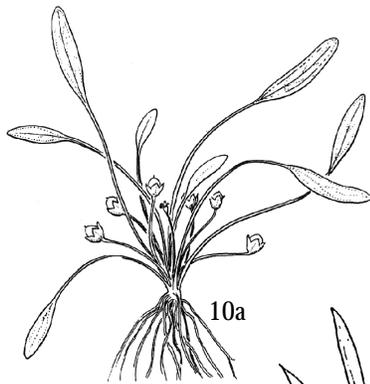
- 4a. Leaves undivided with parallel veins; flower parts usually in 3s or 6s (monocots; e.g., grasses, sedges, rushes, lilies) Key 4 (p. 12)
- 4b. Leaves simple or divided, with net-like venation; flower parts usually in 2s or 4s or 5s (dicots; i.e., broad-leaved plants) Key 5 (p. 23)

Key 1

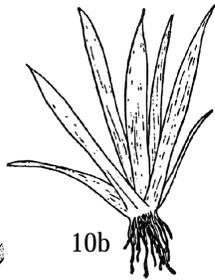
Submergent or Floating-leaved Plants



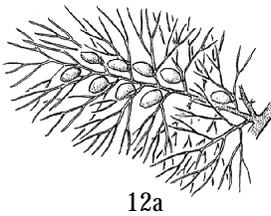
- 1a. Entire plant floating and smaller than 1 cm in diameter, stems lacking 2
- 1b. Plants larger, usually with obvious stems 4
- 2a. Plants <2 mm and egg-shaped or bead-like *Wolffia*
- 2b. Plants flattened and larger 3
- 3a. Plants consisting of many elliptic fronds attached together at the edges with numerous roots hanging from each frond *Spirodella*
- 3b. Plants consisting of 2 to many round to oar-shaped fronds, each with a single root or roots lacking *Lemna*
- 4a. Leaves large and broadly elliptic to circular, borne on the end of long stalks and floating on the surface of the water (water lilies) 5
- 4b. Leaves divided or linear to narrowly elliptic in outline 7
- 5a. Petiole attached in the center of the leaf; flowers purplish *Brasenia*
- 5b. Petioles attached in the sinus at edge of leaf; flowers yellow or white to pinkish 6
- 6a. Flowers yellow; leaves with most veins originating from the midrib *Nuphar*
- 6b. Flowers white or pinkish; most veins originating from point of petiole attachment *Nyphaea*
- 7a. Plants without flowering or leafy stems, all leaves basal 8
- 7b. Plants with leafy or flowering stems 11
- 8a. Leaves with 4 leaflets, resembling a 4-leaf clover *Marsilea*
- 8b. Leaves not divided into leaflets 9
- 9a. Each leaf with a sac of white spores at the base *Isoetes*
- 9b. Leaves without spore sac at the base 10



- 10a. Leaves broadest near the tip *Limosella*
- 10b. Leaves tapered to the tip and grass-like or floating leaves
arrow-shaped vegetative *Sagittaria, Sparganium or Alisma*



- 11a. Lowest underwater leaves dissected into filiform segments ... 12
- 11b. Underwater leaves linear to elliptic or divided into broad
segments 16
- 12a. Leaves with egg-shaped bladders among the
leaflets *Utricularia*
- 12b. Leaves without bladders 13



- 13a. Leaves and buds alternate on the stem; flowers yellow or
white 14
- 13b. Leaves and buds opposite or whorled; flowers without
petals 15



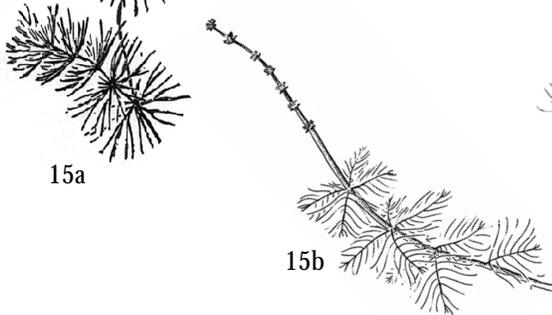
- 14a. Leaflets with toothed margins *Sium*
- 14b. Ultimate leaf segments with smooth margins *Ranunculus*
- 15a. Ultimate leaf segments with sparsely toothed margins; stems
usually green *Ceratophyllum*
- 15b. Ultimate leaf segments entire-margined; stems often
reddish *Myriophyllum*



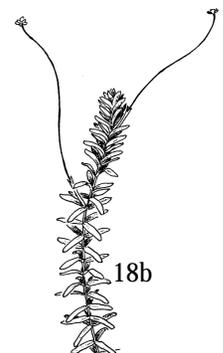
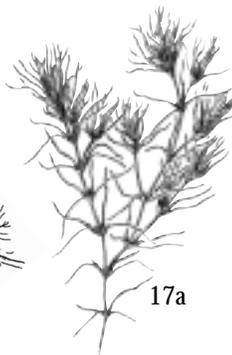
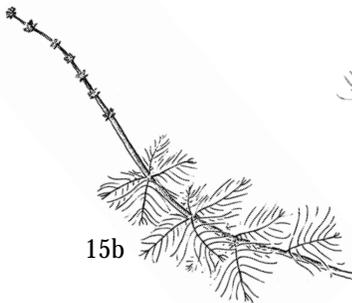
- 16a. At least some nodes with >2 leaves attached 17
- 16b. Leaves 1 or 2 per node or all basal 19



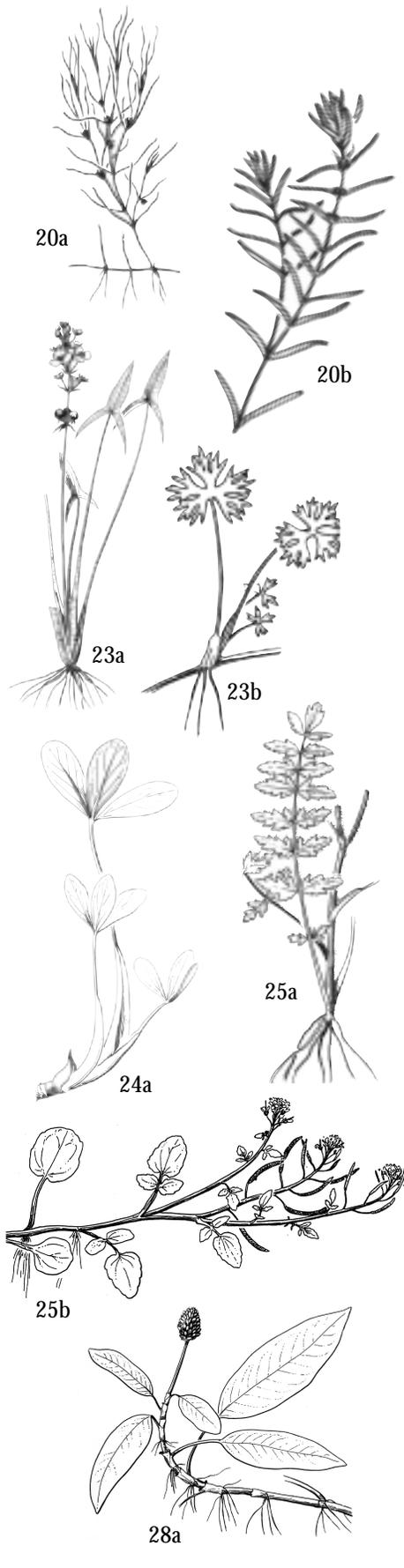
- 17a. Leaves scarcely 1 mm wide *Najas*
- 17b. Leaves >1.5 mm wide 18



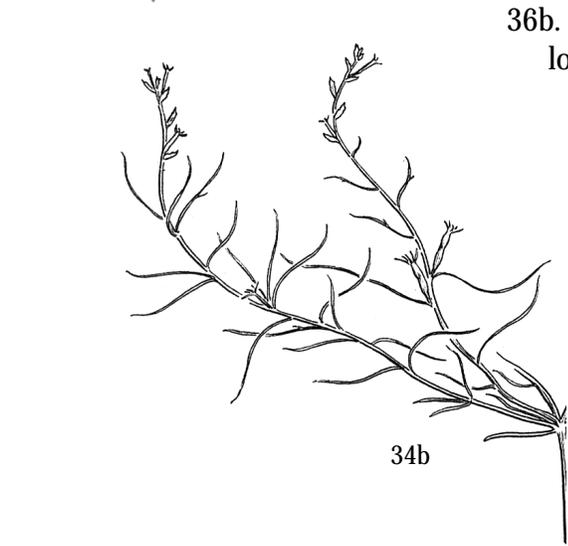
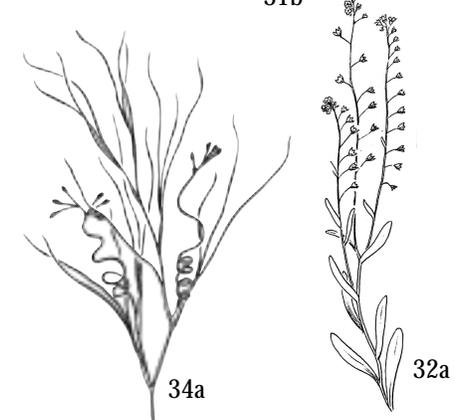
- 18a. Leaves mostly 6 per node. *Hippuris*
- 18b. Leaves mostly 2-4 per node *Elodea*



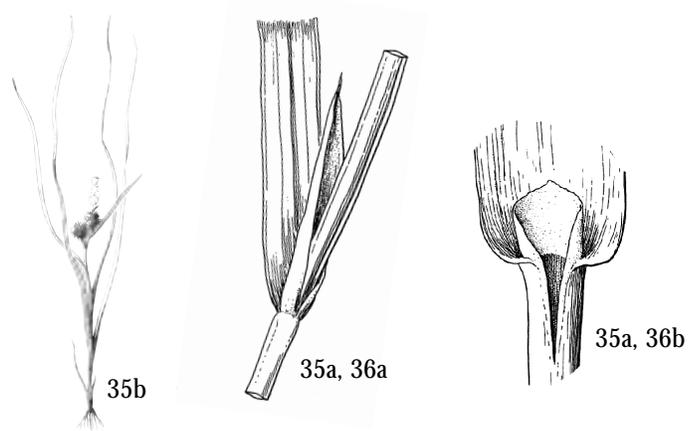
Key 1: Aquatic Plants



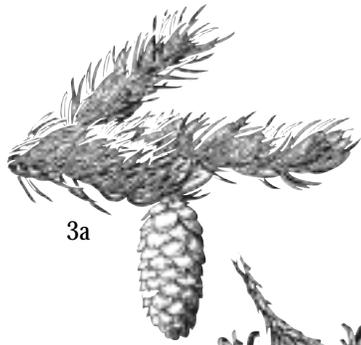
- 19a. Submersed leaves opposite (2 per node) 20
- 19b. Submersed leaves alternate (1 per node) or all basal 21
- 20a. Some leaves ≥ 2 cm long *Zannichellia*
- 20b. Leaves < 2 cm long *Callitriche*
- 21a. leaves lobed or divided into leaflets 22
- 21b. Leaves unlobed and undivided 26
- 22a. Upper leaves lobed but not fully divided into leaflets 23
- 22b. Leaves divided into ≥ 3 leaflets 24
- 23a. Floating leaves arrow-shaped in outline *Sagittaria*
- 23b. Floating leaves fan-shaped in outline *Ranunculus*
- 24a. Leaflets 3, with smooth margins *Menyanthes*
- 24b. Leaflets with toothed or lobed margins 25
- 25a. Leaf stalks (petioles) broadened at the base *Berula*
- 25b. Leaf petioles not dilated at the base *Nasturtium*
- 26a. Submersed leaves lance-shaped to nearly round in outline 27
- 26b. Submersed leaves strap-shaped to linear and grass-like 30
- 27a. Veins of leaf branched off of midrib 28
- 27b. Veins of leaves arising from the point of petiole attachment 29
- 28a. Stems with membranous sheaths (stipules) at point of leaf attachment *Polygonum*
- 28b. Leaves without sheathing stipules *Myosotis*
- 29a. Leaves all attached at the base of the plant *Alisma*
- 29b. Leaves attached along a stem *Potamogeton*



- 30a. Leaves all attached at the base of the plant 31
- 30b. Plants with leafy stems 32
- 31a. Inflorescence branched *Alisma*
- 31b. Inflorescence unbranched and spike-like *Lilaea*
- 32a. Leaves lance- or strap-shaped *Myosotis*
- 32b. Leaves linear, often grass-like 33
- 33a. Flowers and fruits solitary in leaf axils or few at the ends of coiled stalks 34
- 33b. Flowers and fruits in globose to cylindrical clusters 35
- 34a. Flowers and fruits few at the ends of branches of an open inflorescence borne on a coiled stalk; salty water *Ruppia*
- 34b. Flowers and fruits solitary in leaf axils *Howellia*
- 35a. Leaves with a pale membranous appendage on the inside where it joins the stem (ligule or stipule) 36
- 35b. Leaves lacking a ligule or stipule but with an expanded membranous base *Sparganium*
- 36a. Membranous appendage at leaf base (stipule) usually >1 cm long *Potamogeton*
- 36b. Membranous appendage at leaf base (ligule) <1 cm long *Alopecurus or Glyceria* (grasses see Key 4A, p. 17)



Key 2 Trees or Shrubs



3a



4a



4b



5a



5b



6a



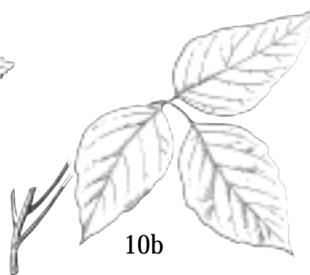
6b



9a



10a



10b



11a

- 1a. Leaves scale-like or needle-like 2
- 1b. Leaves not hardened or minute 6
- 2a. Coniferous trees 3
- 2b. Flower-bearing small trees, shrubs or creeping shrubs 5
- 3a. Leaves are needles ≥ 1 cm long; cones > 2 cm long *Picea*
- 3b. Leaves scale-like, < 1 cm long; cones or berries < 2 cm long ... 4
- 4a. Cones brown and woody; bark in long strips *Thuja*
- 4b. Cones blue and berry-like; bark not in strips *Juniperus*
- 5a. Low subalpine subshrubs *Phyllodoce*
- 5b. Low-elevation, riparian tree or shrubs *Tamarix*
- 6a. Leaves and buds alternate each other on the twigs 7
- 6b. Leaves and buds opposite each other 33
- 7a. Leaves lobed or divided $\geq 1/3$ way to midrib 8
- 7b. Leaf margins entire or toothed $< 1/3$ way to the midrib 13
- 8a. Leaves divided into distinct leaflets 9
- 8b. Leaves lobed but not fully divided into leaflets 11
- 9a. Leaves with > 3 leaflets *Potentilla* (syn)
- 9a. Leaves with 3 leaflets 10
- 10a. Stem with small bracts (stipules) where it joins with leaf stalks *Rubus*
- 10b. Stems without stipules *Toxicodendron* (syn)
- 11a. Shrubs with rigid stems *Ribes*
- 11b. Vines, rigid stems lacking 12



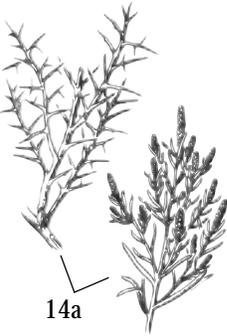
12a. Some leaves with 1-2 basal lobes; ripe berries red ... *Solanum*

12b. Leaves lobed like a maple; berries purple *Vitis*



13a. Branches with spines or spine-like branchlets 14

13b. Branches unarmed 16



14a. Leaves fleshy and tubular *Sarcobatus*

14b. Leaves otherwise 15

15a. Leaves green, without dense hair *Crataegus*

15b. Leaves covered with dense white or silvery hair *Elaeagnus*



16a. Upper leaf surface whitish or grayish hairy 17

16b. Upper leaf surface green 19

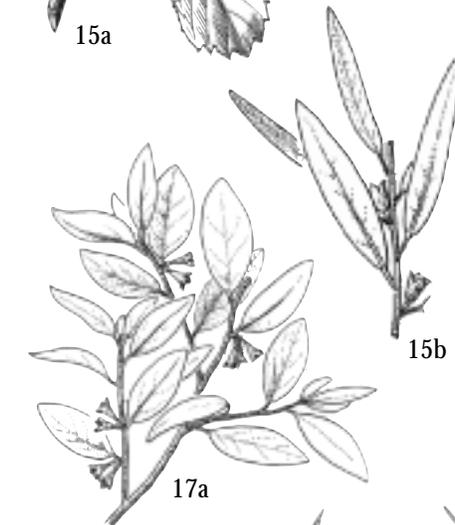


17a. Leaves with flake-shaped hairs *Elaeagnus*

17b. Leaves with fine linear hairs or hair lacking 18

18a. Leaves solitary at each node *Salix*

18b. Lower leaves often clustered at the alternate nodes ... *Artemisia*



19a. Flowers and fruits borne in congested, cylindrical clusters (catkins); flowers without petals 20

19b. Flowers and fruits borne in simple or branched, more open inflorescences; flowers mostly with petals 23

20a. Leaf margins with large and small teeth 21

20b. Leaf margins entire or evenly toothed 22

21a. Female catkins cone-like and persisting on the twigs ... *Alnus*

21b. Female catkins not cone-like, usually disintegrating in the spring or early summer *Betula*



Key 2: Woody Plants



- 22a. Trees with pendent catkins and gluey, resinous buds *Populus*
- 22b. Mainly shrubs, usually with erect or spreading catkins *Salix*



- 23a. Leaves thick and leathery 24
- 23b. Leaves thinner, not leathery 27

- 24a. Leaf margins smooth and rolled under 25
- 24b. Leaf margins shallowly toothed and not inrolled 26

- 25a. Twigs with small resinous dots (glands) *Ledum*
- 25b. Twigs without glands *Kalmia*

- 26a. Stems prostrate and trailing *Gaultheria*
- 26b. Stems erect 0.5-1.5 m tall *Rhododendron*

- 27a. Tree, mainly occurring in the eastern tier of counties ... *Ulmus*
- 27b. Shrubs, vines or occasionally small trees 28

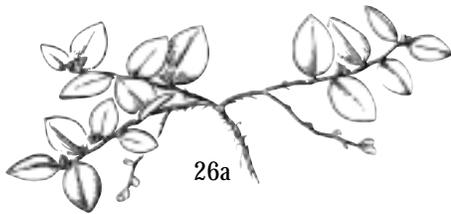
- 28a. Fruit a dry capsule 29
- 28b. Fruit a berry 30

- 29a. Flowers and fruits numerous, clustered on branch tips *Spiraea*

- 29b. Flowers and fruits several, below terminal leaf cluster *Rhododendron*

- 30a. Vines; some leaves usually with 1-2 basal lobes *Solanum*
- 30b. Shrubs; leaves unlobed 31

- 31a. Berry with 1 large seed *Prunus*
- 31b. Berry with >1 small seeds 32



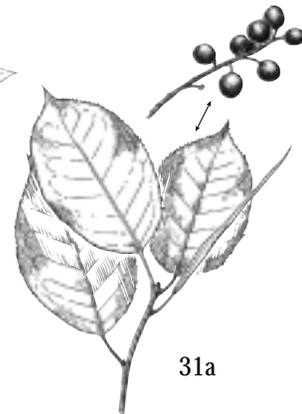
26b, 29b



29a



30a



31a



- 32a. Larger leaves >4 cm long; flowers and fruits >1 per leaf axil..... *Rhamnus*
 32b. Leaves mostly <4 cm long; flowers and fruits 1 per leaf axil..... *Vaccinium*

- 33a. Leaves with entire margins 34
 33b. Leaves lobed or divided 36

- 34a. Leaves silvery with flake-like hairs *Shepherdia*
 34a. Leaves green and glabrous 35

- 35a. Flowers and fruits in a hemispheric cluster at stem tips *Cornus*
 35b. Flowers and fruits few, arising from leaf axils *Lonicera*

- 36a. Leaves with 5-7 unlobed leaflets *Fraxinus*
 36b. Leaves with lobes or 3 leaflets 37

- 37a. Terminal leaves of twigs with toothed but unlobed margins *Virburnum*
 37b. Terminal leaves lobed or divided *Acer*



32b

32a

34a

35a



35b



36a



37a



37b

Key 3

Ferns and Allies

Cystopteris montana has been found once in Montana, at high elevations in Glacier National Park. It is not included here.

- 1a. Leaves small (<1 cm) and scale-like or lacking..... 2
- 1b. Leaves larger and usually divided into segments 4

- 2a. Stems segmented, grooved lengthwise, mostly erect (horse-tails) *Equisetum*
- 2b. Stems not segmented or grooved lengthwise, creeping 3

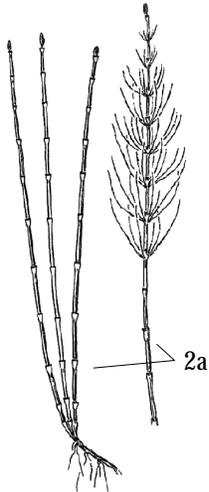
- 3a. Leaves narrowly lance-shaped with entire margins..... *Lycopodium*
- 3b. Leaves lance-shaped with a few pointed teeth..... *Selaginella*

- 4a. Leaf solitary and arising from the stem below the spore-bearing, stem-like portion of the plant 5
- 4b. Leaves all similar, arising from the base, usually several and fern or clover-like..... 6

- 5a. Solitary, sterile (not spore-bearing) leaf elliptic with entire margins..... *Ophioglossum*
- 5b. Sterile leaf divided into few to many segments ... *Botrychium*

- 6a. Leaves 4-lobed, clover-like *Marsilea*
- 6b. Leaves fern-like, not clover-like 7

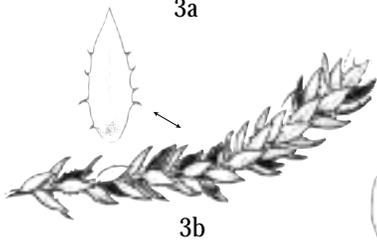
- 7a. Each frond (leaf) a wire-like purple stalk divided like the fingers of a hand (palmate) into several leaflet-bearing branches *Adiantum*
- 7b. Fronds pinnately divided (like the main branches of a pine tree); stalks not dark purple except at the base..... 8



2a



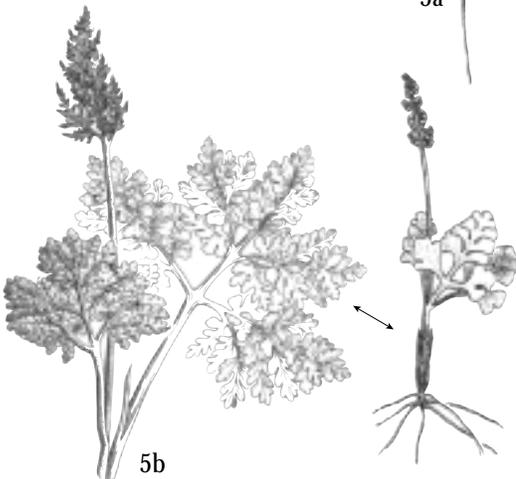
3a



3b



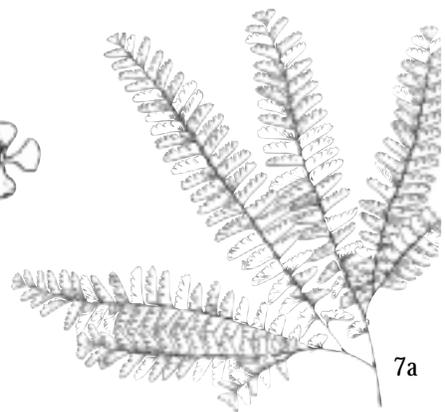
5a



5b



6a



7a



8a

8a. Each frond divided first into 3 parts *Gymnocarpium*

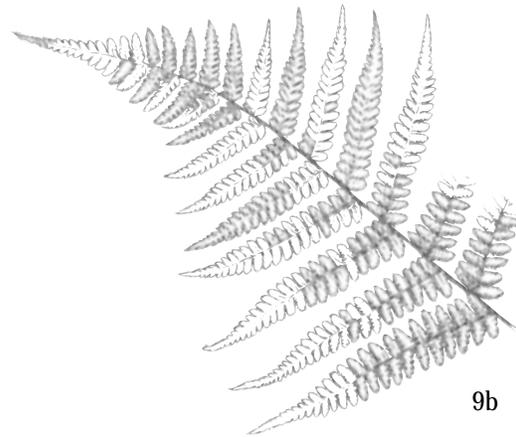
8b. Fronds first deeply divided into many pinnate segments 9

9a. Fronds once divided into deeply lobed segments.... *Dryopteris*

9b. Fronds deeply divided into segments that are again deeply divided into lobed segments..... *Athyrium*



9a

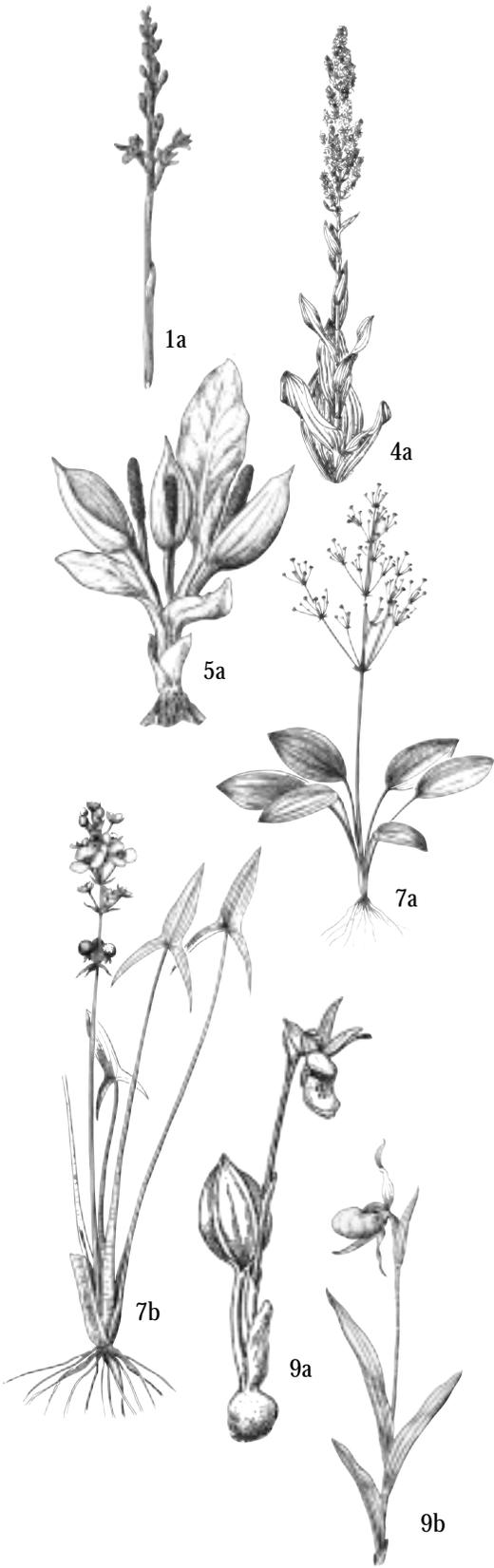


9b

Key 4

Herbaceous, Emergent Monocots

Luzula wahlenbergii occurs only near or above treeline and is not included in the following key.



- 1a. Leaves and stems not green; leaves reduced to sheaths *Corallorhiza*
- 1b. Leaves and/or stems green; at least lower leaves not reduced ... 2
- 2a. Leaves elliptic or broader in outline, sometimes with a pair of basal lobes 3
- 2b. Leaves strap-shaped to linear in outline, often grass-like 15
- 3a. Plants with coiled side branches, vine-like; hemispheric inflorescences (umbels) arising in leaf axils *Smilax*
- 3b. Plants not vine-like; flowers not in axillary umbels 4
- 4a. Plants usually >1 m tall; some leaves >10 cm wide ... *Veratrum*
- 4b. Emergent portion of the stem usually <1 m tall 5
- 5a. Flowers and fruits borne in a tight, cylindrical spike within a yellow, hood-like bract (spathe); leaves often >15 cm wide *Lysichiton*
- 5b. Inflorescence not as above; leaves smaller 6
- 6a. Numerous flowers and fruits borne in open, branched inflorescences 7
- 6b. Flowers and fruits few or borne in narrow unbranched inflorescences 8
- 7a. Fruit wheel-shaped, flat on top *Alisma*
- 7b. Fruit hemispheric, round on top *Sagittaria*
- 8a. Flowers 1-3 and > 1 cm long, each with a large pouch-shaped lip 9
- 8b. Flowers usually >3, smaller 10
- 9a. Plants with a single basal leaf *Calypso*
- 9b. Plants with >1 leaf *Cypripedium*



- 10a. Leaves 2, opposite near middle of stem *Listera*
 10b. Leaves otherwise 11
- 11a. Flowers star-shaped, petals and sepals all similar; fruit a berry 12
 11b. Petals and sepals not all the same shape; fruit a dry capsule ... 13
- 12a. Flowers and fruits solitary in leaf axils, the pendent stalks kinked in the middle *Streptopus*
 12b. Flower and fruit stalks spreading in a terminal inflorescence *Smilacina*
- 13a. Stem with an enlarged, bulb-like base *Liparis*
 13b. Stem not greatly enlarged at the base 14
- 14a. Leaf one, broadly elliptic; lip of flower spotted *Amerorchis* (syn)
 14b. Leaves >1; flower lip not spotted *Coenoglossum, Piperia, Platanthera* (syn)
- 15a. Fruit wheel-shaped, flat on top *Alisma*
 15b. Fruit not wheel-shaped and flat on top 16
- 16a. Flowers lacking perianth parts (petals and sepals), pistils and stamens subtended only by 1-2 bracts or naked 17
 16b. Flowers with a perianth, sometimes inconspicuous 29
- 17a. Flowers and fruits born in a very tight, cylindrical spike 18
 17b. Inflorescence not as above 19
- 18a. Male and female flowers in separate spikes on top of each other, not subtended by a leaf-like bract *Typha*
 18b. Flowers bisexual in a single spike subtended by a long, leaf-like bract *Acorus*
- 19a. Male and female flowers in globose clusters, the female clusters bur-like *Sparganium*
 19b. Flowers not clustered or clusters cylindrical and not bur-like 20

Key 4: Emergent Monocots

- 20a. Leaves long-tubular, round in cross-section *Lilaea*
 20b. Leaves flat or v-shaped in cross-section 21

- 21a. Stems round in cross-section; leaves 2-ranked (2 leaves for each full turn around the stem); each flower subtended by 2 bracts (grasses) Key 4A (p. 17)
 21b. Stems usually triangular in cross-section; leaves 3-ranked; each flower usually subtended by 1 bract 22

- 22a. Seed enclosed or wrapped in a sac-like perigynium in addition to being subtended by a scale-like bract; flowers unisexual 23
 22b. Seed subtended by a scale-like bract but not enclosed in a perigynium; flowers bisexual 24

- 23a. Perigynium open on one side; i.e., not fully closed; rare plants *Kobresia*
 23b. Perigynium fully closed except for the minute pore at the apex *Carex* (see key to the species, p. 55)

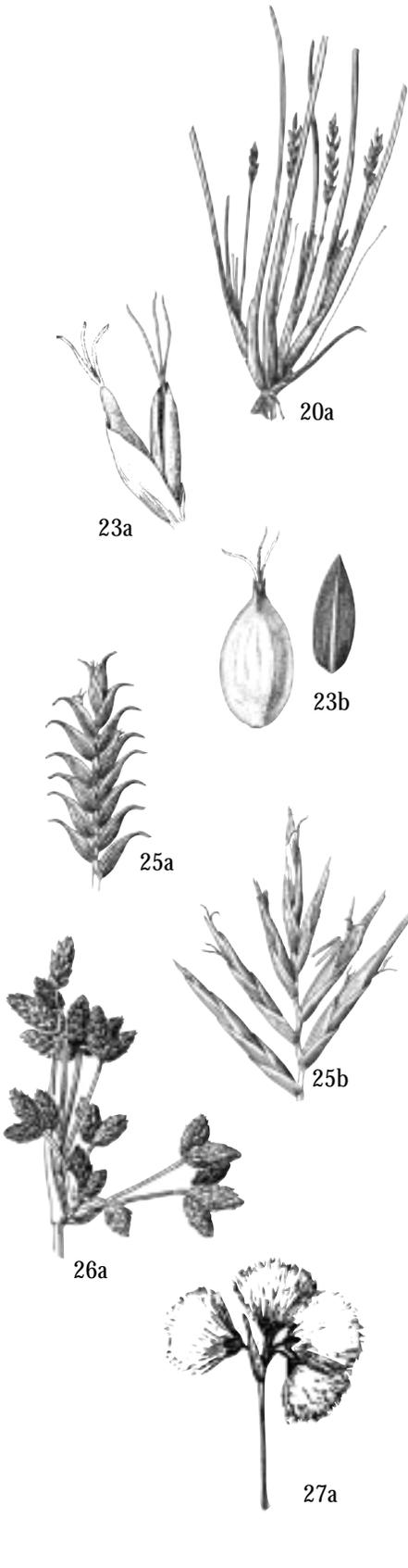
- 24a. Scale-like bracts arranged in 2 ranks 25
 24b. Scale-like bracts spirally arranged 26

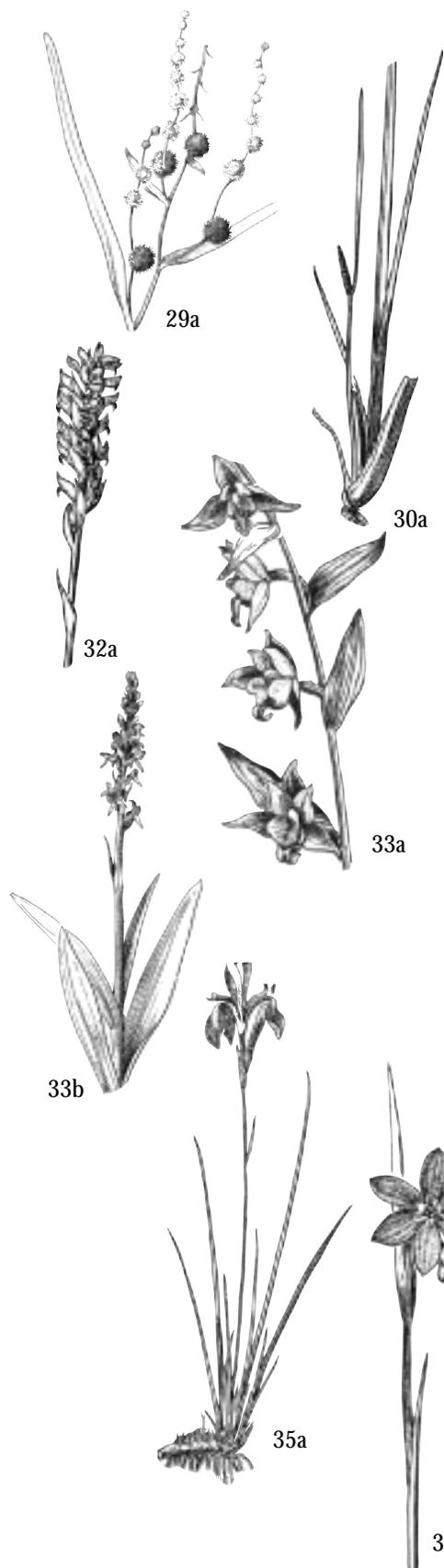
- 25a. Spikelets flattened; annual plants of gravel bars *Cyperus*
 25b. Spikelets cylindrical; perennial plants of peatlands ... *Dulichium*

- 26a. Spikelets more than 1 per stem *Scirpus*
 26b. Spikelets solitary at the tip of the stem 27

- 27a. Bristles at base of seed >5 times as long as the seed and forming a cotton-like tuft *Eriophorum*
 27b. Bristles at the base of seed 1-2 times as long as the seed ... 28

- 28a. Stem with at least 1 small leaf *Scirpus*
 28b. Stem leaves lacking *Eleocharis*





- 29a. Male and female flowers in separate, globose clusters;
perianth (petals and sepals) inconspicuous *Sparganium*
- 29b. Plants not as above 30
- 30a. Flowers densely clustered in a cylindrical spike subtended by
a long, leaf-like bract *Acorus*
- 30b. Plants not as above 31
- 31a. Flowers with 1 petal distinctly different than the other 2 32
- 31b. All 3 petals and sometimes sepals similar 34
- 32a. Flowers arranged in a distinct spiral at the top of the
stem *Spiranthes*
- 32b. Flowers in a loose to dense spike but not spirally arranged 33
- 33a. Lip petal ≥ 15 mm long, flowers reddish *Epipactis*
- 33b. Lip petal < 15 mm long, flowers white or
greenish *Habenaria* (syn)
- 34a. Petals and sepals attached to the top of the developing fruit;
leaves iris-like (equitant) 35
- 34b. Base of petals and sepals united below the developing fruit ... 36
- 35a. Flowers > 3 cm across *Iris*
- 35b. Flowers < 2 cm across *Sisyrinchium*
- 36a. Each flower with 3 separate developing fruits... *Scheuchzeria*
- 36b. Each flower with 1 developing fruit 37
- 37a. Petals and sepals < 2 mm long; flower stem completely
leafless *Triglochin*
- 37b. Petals and sepals > 2 mm long 38

Key 4: Emergent Monocots



38a

39a



42a



43a



43b



44a



45a



45b

38a. Petals and sepals brownish or greenish and scale-like *Juncus* (see key to the species, p. 66)
 38b. Petals and sepals more fleshy, petal-like and colorful 39

39a. Petals >5 cm long *Lilium*
 39b. Flowers <4 cm long 40

40a. Flowers borne in an open or dense inflorescence at the tip of the stem 41
 40b. Flowers borne in a more elongate inflorescence 44

41a. Plants with gland-tipped hairs in or just below the inflorescence; inflorescence not umbrella-like (umbel) 42
 41b. Plants not glandular; inflorescence an umbel 43

42a. Flowers and fruits >8; leaves erect; petals ≤5 mm long *Tofieldia*
 42b. Flowers and fruits <8; leaves curved outward; petals larger *Tradescantia*

43a. Plant with an onion smell; stems arising from a bulb ... *Allium*
 43b. Plant lacking onion odor; stems from a rhizome *Butomus*

44a. Flowers bronze-colored; flowers and fruit pendent *Stenanthium*
 44b. Flowers white or blue; flowers and fruits erect or spreading 45

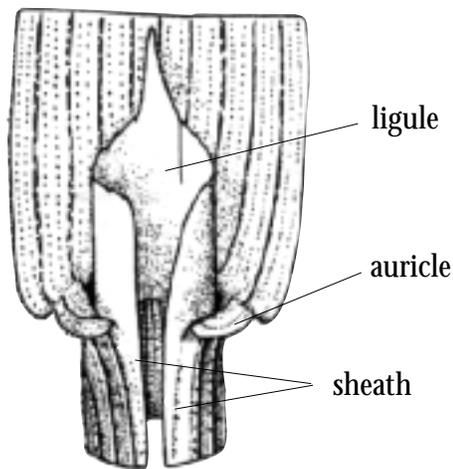
45a. Stems leafless; petals blue *Camassia*
 45b. Stems with reduced leaves; petals white *Zigadenus*

Key 4A The Grasses

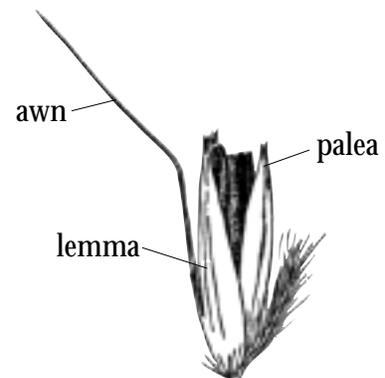
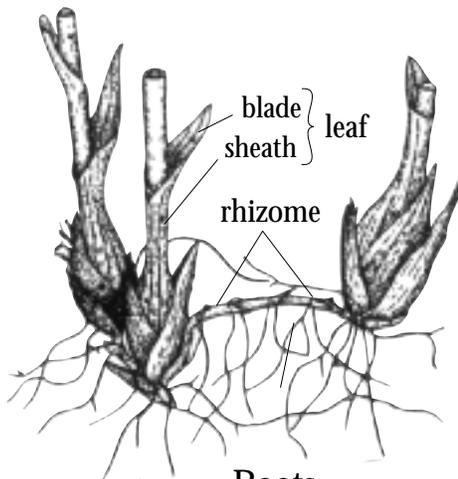
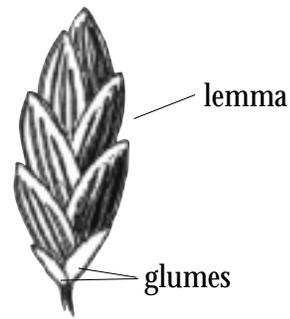
Members of the **Poaceae (Grass Family)** have leaves with a basal portion (sheath) that sheaths the stem and forms a small, hairy or membranous extension (ligule) where it joins the blade. The flowers are usually bisexual and composed of a canoe-shaped bract (lemma) enfolding at the base another, usually smaller bract (palea). Flowers are arranged in 2-sided spikelets. Each spikelet usually has 2 sterile canoe-like bracts (glumes) at the base. Lemmas, paleas, and glumes may have a needle-like awn arising from the back or tip. The fruit is a seed-like grain, often enclosed in the lemma and palea.

Grass plants increase vegetatively by forming new tillers at the base. Each tiller is a stem with 1 or more leaves. In species with erect tillers the plant will form tussocks or bunches of side-by-side stems (bunchgrasses). In other species some or all of the tillers grow horizontally. These horizontal tillers are rhizomes (under the ground) or stolons (above ground). Rhizomes give rise to erect tillers from their nodes. In rhizomatous or stoloniferous grasses the plants will be single or small tufts of tillers spaced throughout the surface of the ground (sod) rather than distinct large tussocks as in bunchgrasses.

Collar

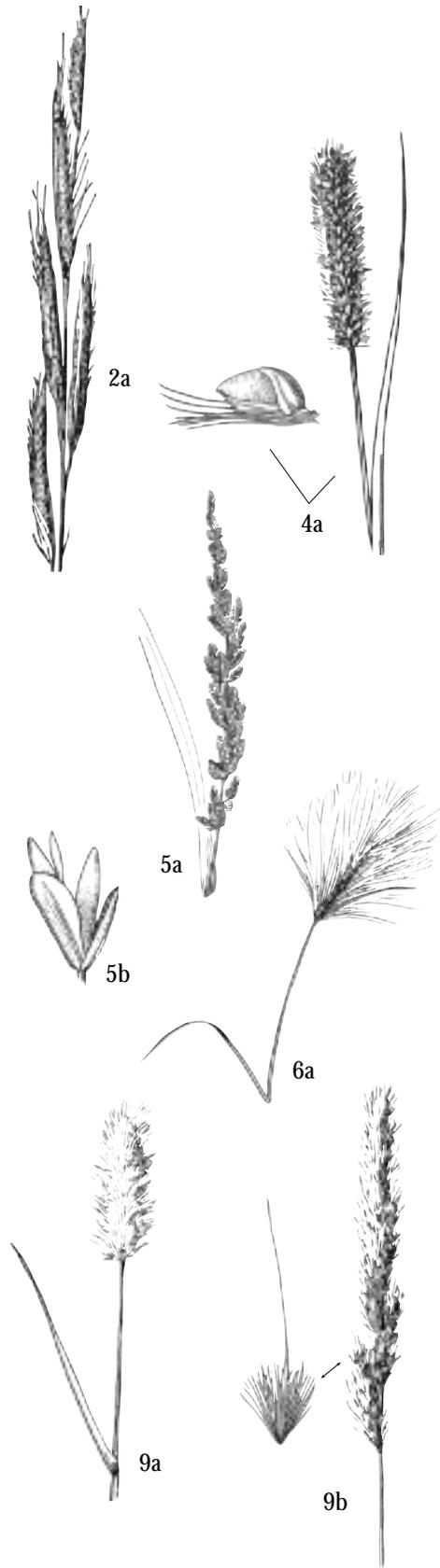


Spikelet

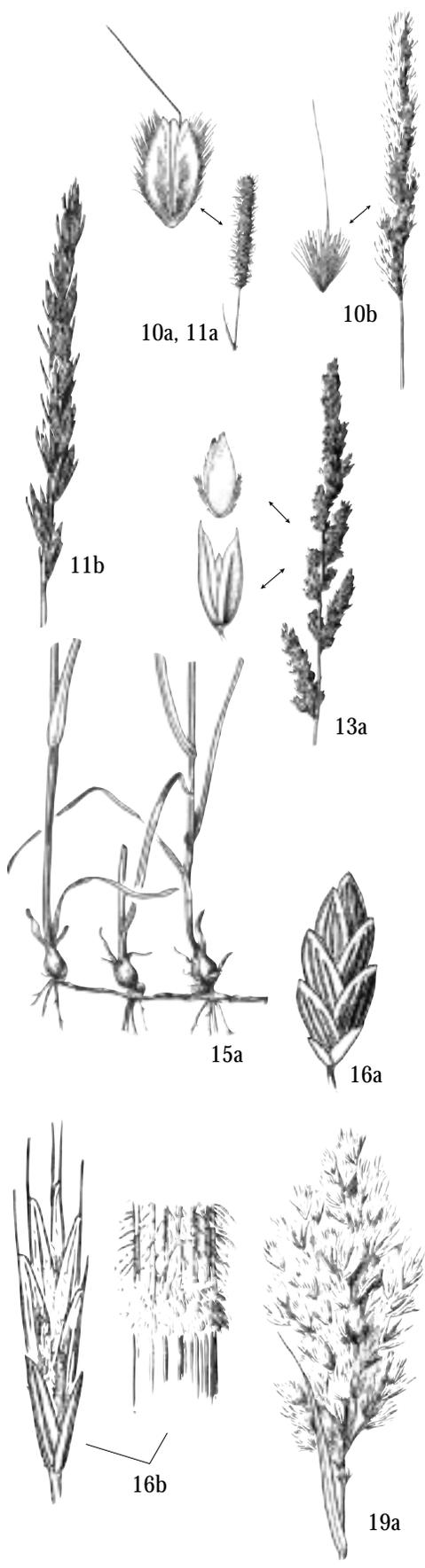


Roots

Phippsia algida and *Phleum alpinum* are found only at high elevations and are not included in the following key.



- 1a. Stalks of spikelets lacking or very short; inflorescence of one or more spikes or spike-like cluster(s) 2
- 1b. Spikelets apparently stalked, not very tightly clustered; inflorescence more open and branched; branches erect or spreading 12
- 2a. Inflorescence of erect, spike-like clusters; glumes with stiff hairs along the midvein; ligule a fringe of hairs *Spartina*
- 2b. Plants not with the above combination of characters 3
- 3a. Lemmas and glumes without distinct awns 4
- 3b. Lemmas, glumes or both with awns 6
- 4a. Spikelets subtended by 3 or more barbed bristles *Setaria*
- 4b. Spikelets not subtended by barbed bristles 5
- 5a. Spikelets 1-flowered; larger leaf blades >5 mm wide; glumes similar *Beckmannia*
- 5b. Spikelets 2-flowered; leaves <5 mm wide; one glume wider than the other *Sphenopholis*
- 6a. Spikelet of 1 fertile flower but >2 awn-like glumes ... *Hordeum*
- 6b. Each spikelet with >1 fertile flower or <3 awned glumes 7
- 7a. Glumes hairy 8
- 7b. Glumes smooth and hairless 11
- 8a. Glumes with awns 9
- 8b. Glumes unawned 10
- 9a. Ligule >3 mm long; glumes sinuous *Polypogon*
- 9b. Ligule <1 mm long; glumes straight *Muhlenbergia*



10a. Awns arising from the middle of the lemma *Alopecurus*
 10b. Lemmas awned from the tip *Muhlenbergia*

11a. Spikelets with 1 floret and 1 awn each; awns arising from middle of the lemma *Alopecurus*
 11b. Spikelets with >1 floret or >1 awn; lemmas awned from the tip *Agropyron* (syn) and *Elymus*

12a. Spikelets with >3 florets 13
 12b. Spikelets with 1 or 2 florets 26

13a. Spikelets with 3 florets, 1 fertile the other 2 reduced to linear, hairy segments; larger leaf blades > 7 mm wide *Phalaris*
 13b. Plants without the above combination of characters 14

14a. Leaf sheaths fused around the stem most of their length 15
 14b. Leaf sheaths open (edges not fused) at least 1/3 of their length 17

15a. Stems with bulb-like bases; stems smooth and hairless ... *Melica*
 15b. Stem bases not bulb-like; stems hairy or not 16

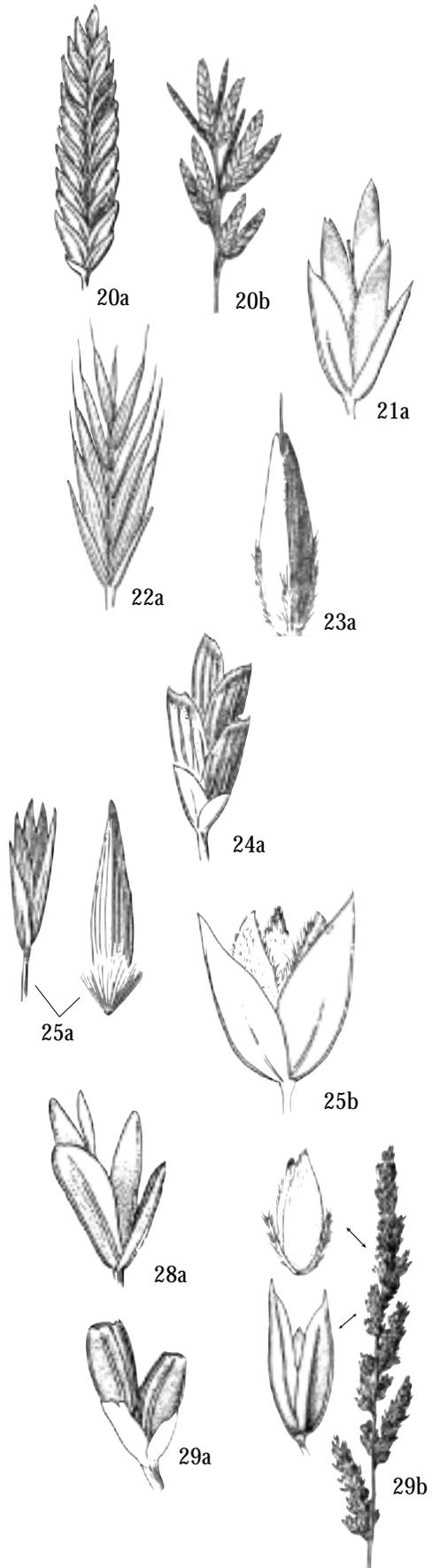
16a. Stems hairless; both glumes 1-veined; veins of lemmas parallel to the tip *Glyceria*
 16b. Stems hairy; 1 glume with at least 3 veins; veins of lemma converging at the tip *Bromus*

17a. Ligule of principle leaves at least partly a fringe of hairs; top of leaf sheaths (collar) often hairy 18
 17b. Ligule membranous; collar hairless 21

18a. Lemmas awned 19
 18b. Lemmas without awns 20

19a. Lemmas awned from the tip; awn straight; plant >1 m tall; inflorescence feathery with many spikelets *Phragmites*
 19b. Awn arising from the sinus between apical teeth of the lemma; awn often twisted; inflorescence with few spikelets *Danthonia*

Key 4A: Grasses



- 20a. Plant a fibrous-rooted annual *Eragrostis*
- 20b. Plant a rhizomatous perennial *Distichlis*

- 21a. Upper leaf surface with parallel lines lengthwise along the midvein; leaf tip shaped like prow of a canoe *Poa*
- 21b. Leaves without “railroad tracks” or canoe-shaped tips 22

- 22a. Ligule higher on the edges than in the middle, and/or leaf sheath with 2 ear-like appendages (auricles) at the top (collar) where the edges separate *Festuca*
- 22b. Ligule not higher on the edges and collar without auricles 23

- 23a. Plant annual; lemmas awned from between a minutely 2-toothed apex; inflorescence partly enclosed by the upper leaf *Leptochloa*
- 23b. Plant perennial; lemmas not awned 24

- 24a. Both glumes shorter than the lowest lemma; veins of lemma parallel to the tip *Puccinellia*
- 24b. At least 1 glume longer than the lowest lemma; veins of lemma converging toward the tip 25

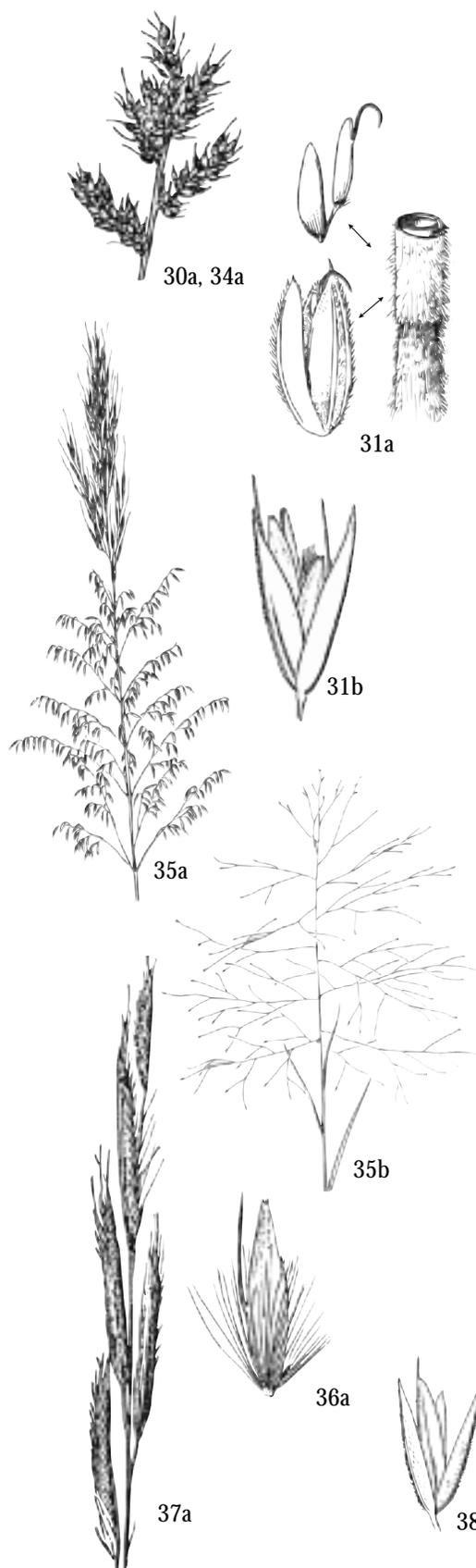
- 25a. Only 1 glume as long as the lowest lemma; lemma long-hairy below but hairless above *Scolochloa*
- 25b. Both glumes longer than the lowest lemma; lemma short-hairy all over *Hierochloa*

- 26a. Most spikelets with 2 florets 27
- 26b. Spikelets with 1 floret or apparently so 32

- 27a. Lemmas without awns 28
- 27b. Lemmas awned 30

- 28a. One glume obviously broader at the tip than the other *Sphenopholis*
- 28b. Glumes similar 29

- 29a. Glumes shorter than the lemmas; stems <1 m long, often prostrate at the base *Catabrosa*
- 29b. Glumes longer than the lemmas; stems erect, usually > 1 m high *Phalaris*



- 30a. Glumes smaller than lemmas, with bristly hairs; ligule absent *Echinochloa*
- 30b. Glumes without bristly hairs, at least 1 as long as the lemmas; ligules membranous 31
- 31a. Ligule short and blunt; plant hairy; lower lemma unawned *Holcus*
- 31b. Ligule long and pointed; plant hairless; both lemmas awned *Deschampsia* and *Vahlodea* (syn)
- 32a. Lemmas with awns 33
- 32b. Lemmas without awns 39
- 33a. Both glumes smaller than the lemma or lacking 34
- 33b. At least 1 glume as long or longer than the lemma 36
- 34a. Ligule absent *Echinochloa*
- 34b. Membranous ligule present 35
- 35a. Plants >1 m tall, usually in standing water *Zizania*
- 35b. Plants shorter *Muhlenbergia*
- 36a. Florets with tuft of hair at the base, at least 1/4 as long as the lemma *Calamagrostis*
- 36b. Florets without basal tuft of long hair 37
- 37a. Inflorescence of erect, spike-like clusters; ligule a fringe of hair *Spartina*
- 37b. Florets not in spike-like clusters 38
- 38a. Leaf blades >7 mm wide *Cinna*
- 38b. Leaf blades <7 mm wide *Agrostis*
- 39a. Inflorescence of stalked spikes, each composed of tightly clustered florets 40
- 39b. Florets not so tightly clustered 41

Key 4A: Grasses



- 40a. Ligules a fringe of hairs; glumes with stiff hairs along the midvein *Spartina*
 40b. Ligules membranous; glumes mostly glabrous... *Beckmannia*

- 41a. At least 1 glume as long or longer than the lemma 42
 41b. Both glumes shorter than the lemma or lacking 44

- 42a. Leaf blades <7 mm wide *Agrostis*
 42b. Blades of some leaves >7 mm wide 43

- 43a. Some lemmas with a short awn; branches of inflorescence widely spreading *Cinna*
 43b. Lemma unawned; inflorescence congested *Phalaris*

- 44a. Glumes lacking; lemmas bristly-hairy *Leersia*
 44b. Glumes present; lemmas not bristly 45

- 45a. Some leaves >5 mm wide *Panicum*
 45b. Leaves <4 mm wide 46

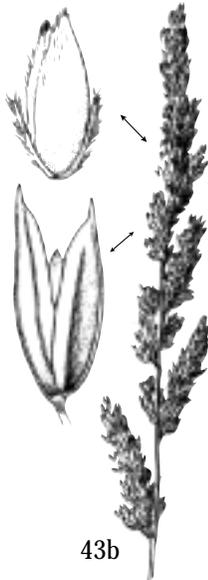
- 46a. Ligule of hairs; leaf blade hairy just above and around the ligule *Sporobolus*
 46b. Ligule membranous; leaf blade not as above *Muhlenbergia*



42a



43a



43b



44a



45a



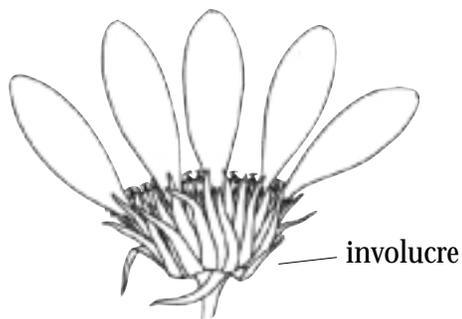
46a



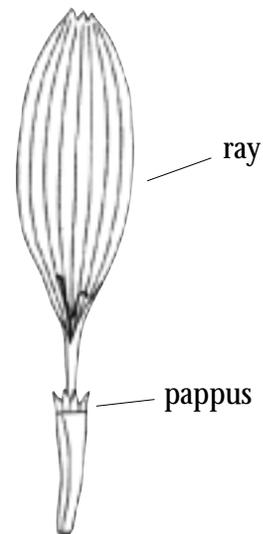
46b

Key 5 Emergent Dicots

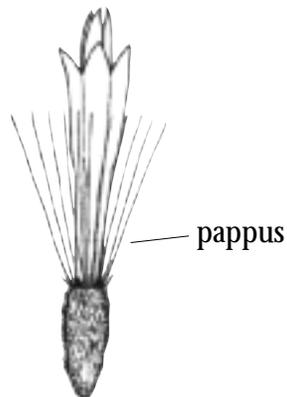
In the **Asteraceae (Sunflower Family)** the flowers are clustered in heads on a common receptacle, tightly surrounded by a cup- or tube-like involucre of papery to leaf-like bracts in 1 to many series of different heights. The corolla can be tubular and 5-lobed (disk flower) or strap-like (ray flower). The calyx is modified into a pappus of bristles, scales or lacking. The flower heads are often mistaken for flowers. Flower heads are of 3 types: (1) dandelion-like — all flowers have strap-shaped corollas, (2) thistle-like — all flowers have tubular corollas, and (3) aster-like — central flowers are tubular and outer are strap-shaped. The involucre bracts and pappus are important characters for delineating genera.



Head

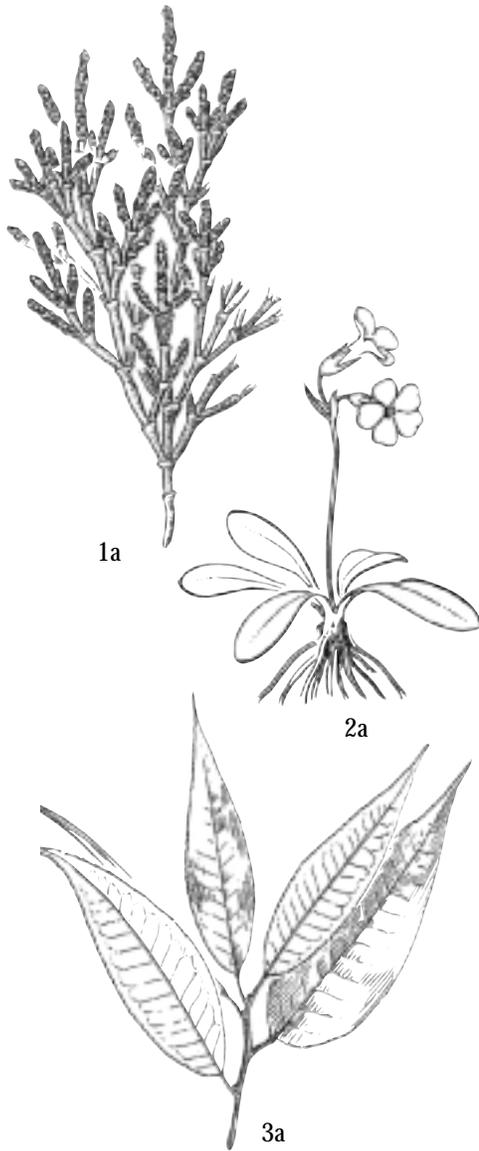


Ray Flower



Disk Flower

Key 5: Emergent Dicots

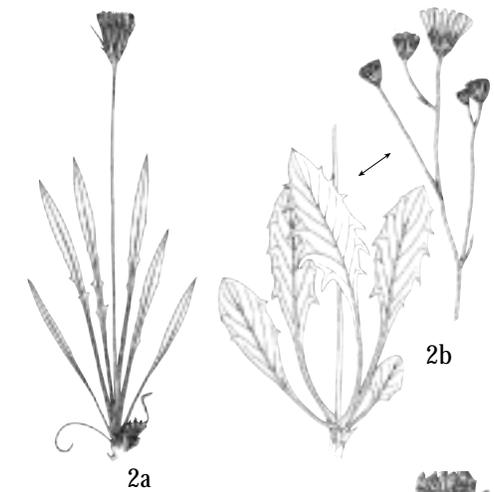


Campanula parryi, *C. uniflora*, *Erigeron humilis*, *Gentiana algida*, *G. glauca*, *Gentianella propinqua*, *G. tenella*, *Parnassia kotzebuei*, *Potentilla drummondii*, *Primula parryi*, *Ranunculus adoneus*, *Veronica cusickii* and *V. wormskjoldii* are strictly alpine or high subalpine and are not included here.

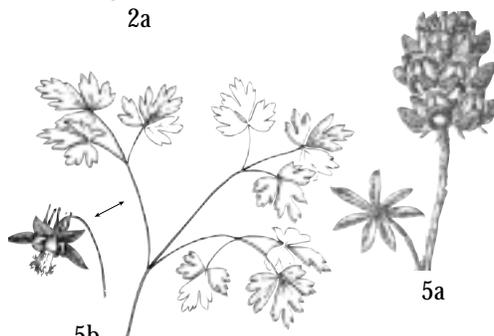
- 1a. Leaves reduced to scales or lacking; stems red and succulent *Salicornia*
- 1b. Leaves usually apparent; stems usually not red and succulent 2
- 2a. Leaves all in a basal rosette, sometimes a small leaf-like bract occurs in the middle of the otherwise naked flowering stem Key 5A (p. 25)
- 2b. Leafy stems present 3
- 3a. Lower leaves, leaf buds, and branches alternate on the stem 4
- 3b. Lower leaves, leaf buds, and branches opposite or in whorls of 3 or more 5
- 4a. Lower leaves divided into leaflets or lobed at least 1/3 of the way to the midrib Key 5B (p. 29)
- 4b. Lower leaves with entire (smooth) or toothed margins Key 5C (p. 36)
- 5a. Lower leaves divided into leaflets or with lobed or toothed margins Key 5D (p. 44)
- 5b. Lower leaves with entire (smooth) margins ... Key 5E (p. 48)

Key 5a

Emergent Dicots with leaves all basal



- 1a. Sap milky; flowers in dandelion-like heads 2
- 1b. Sap clear; flowers not dandelion-like 3
- 2a. Flower heads solitary on stem tips *Agoseris*
- 2b. Flower heads >1 *Crepis*



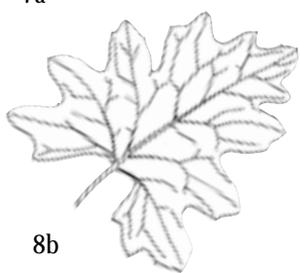
- 3a. Leaves divided into leaflets or with lobed margins 4
- 3b. Leaves with toothed to entire margins (heart-shaped leaves that appear lobed at the base are included here) 9
- 4a. Leaves divided into distinct, short-stalked leaflets 5
- 4b. Leaves lobed but not fully divided into leaflets 6
- 5a. Leaflets all attached at their base to the end of the leaf stalk, like fingers on a hand (palmate) *Lupinus*
- 5b. Leaflets born on branches of the leaf *Aquilegia*



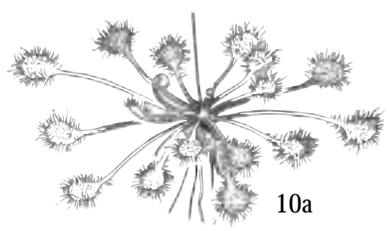
- 6a. Outline of leaf lance-shaped *Oenothera* or *Camissonia*
- 6b. Leaf arrow-shaped or fan-shaped 7
- 7a. Outline of leaf fan-shaped *Romanzoffia*
- 7b. Outline of leaf arrow-shaped 8



- 8a. Leaf blades <5 cm long *Ranunculus*
- 8b. Leaf blades >5 cm long *Petasites*
- 9a. Leaves sticky or slimy 10
- 9b. Leaves not sticky or slimy 12



- 10a. Leaves covered with purplish, sticky, gland-tipped hairs *Drosera*
- 10b. Leaves slimy on upper surface 11
- 11a. Rosettes of close pairs of opposite leaves *Mimulus*
- 11b. Plants with true rosettes, leaves yellowish *Pinguicula*



Key 5A: Dicots with Basal Leaves



15a



15b



16a



17a



19a



18a



19b



21a



21b



22a

- 12a. Leaves with smooth, entire margins 13
- 12b. Leaves with toothed or uneven margins 25

- 13a. Flowers and fruits solitary on the stem 14
- 13b. Many stems with >1 flower or fruit 20

- 14a. Leaves <5 mm wide 15
- 14b. Leaves >5 mm wide 16

- 15a. Fruit a conical cluster of seeds *Myosurus*
- 15b. Seeds enclosed in a globose capsule *Limosella*

- 16a. Rosettes of close pairs of opposite leaves *Mimulus*
- 16b. Plants with true rosettes 17

- 17a. Flower stems weak and lax *Hesperochiron*
- 17b. Flower stems erect 18

- 18a. Leaf blades strap- to narrowly lance-shaped *Dodecatheon*
- 18b. Leaf blades elliptic to heart-shaped 19

- 19a. Stems without a bract at midstem *Caltha*
- 19b. Stems with a small leaf-like bract in the middle *Parnassia*

- 20a. Petioles <1/4 length of blade, indistinct, or lacking 21
- 20b. Leaves with distinct petioles >1/3 length of the blade 22

- 21a. Stems with gland-tipped hairs *Saxifraga*
- 21b. Stems without glandular hairs *Dodecatheon*

- 22a. Stems with gland-tipped hairs *Saxifraga*
- 22b. Stems without gland-tipped hairs 23

23a. Flowers without stalks in a narrow, spike-like inflorescence *Plantago*
 23b. Flowers stalked 24

24a. Leaves strap- or narrowly lance-shaped *Dodecatheon*
 24b. Leaves wider, elliptic to egg-shaped in outline *Pyrola*

25a. Flowers solitary 26
 25b. Some stems with >1 flower 29

26a. Stems erect 27
 26a. Stems lax and arching, not erect 28

27a. Leaf blades heart-shaped at the base *Caltha*
 27b. Leaf blades rounded to the petiole *Pyrola* (syn)

28a. Leaf blades strap- to narrowly lance-shaped *Camissonia* or *Oenothera*
 28b. Leaf blades elliptic to fan-shaped (violets) *Viola*

29a. Inflorescence open and hemispheric; flower stalks like the spokes of an umbrella 30
 29b. Inflorescence not both open and hemispheric 31

30a. Leaf blades >5 cm long *Petasites*
 30b. Leaf blades smaller *Androsace*

31a. Stems with gland-tipped hairs 32
 31b. Stems without glandular hairs, mostly hairless 34

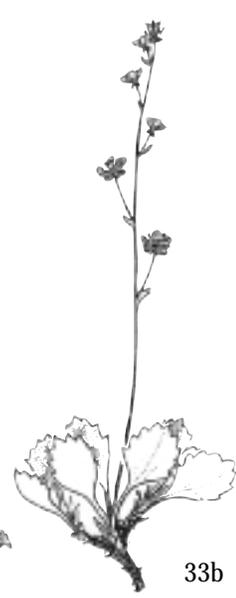
32a. Stems with a small leaf-like bract at midlength *Leptarrhena*
 32b. Stems without a leafy bract at midlength 33

23a
24a
24b
27a
27b
28a
28b
30a
30b
32a

Key 5A: Dicots with Basal Leaves



33a



33b

33a. Flowers well-separated in a narrow, unbranched inflorescence..... *Mitella*

33b. Flowers in 1 to several clusters or in an open, branched inflorescence *Saxifraga*

34a. Leaves powdery-white beneath *Primula*

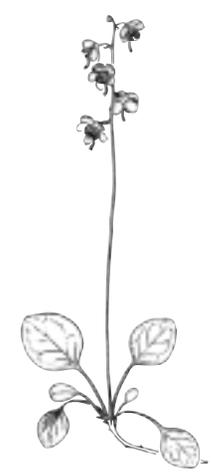
34b. Leaves not white beneath 35



34a



35a



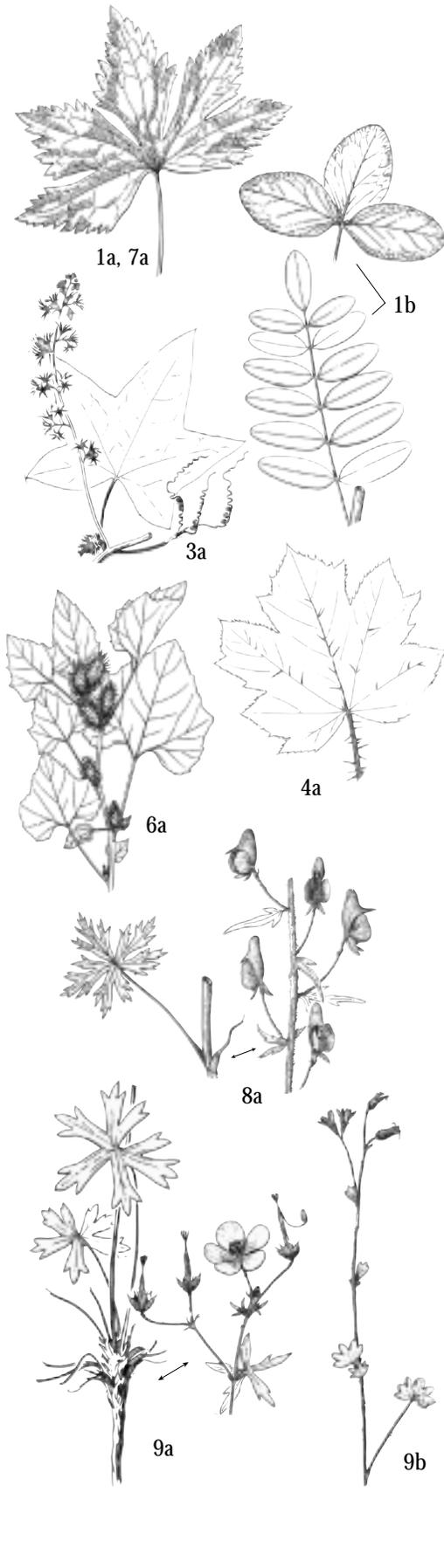
35B

35a. Fruit a cylindrical cluster of seeds *Ranunculus*

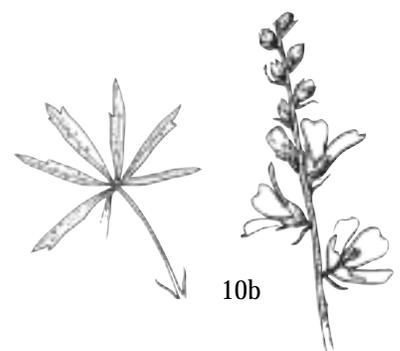
35b. Fruit a pumpkin-shaped capsule enclosing the seeds..... *Pyrola*

Key 5B

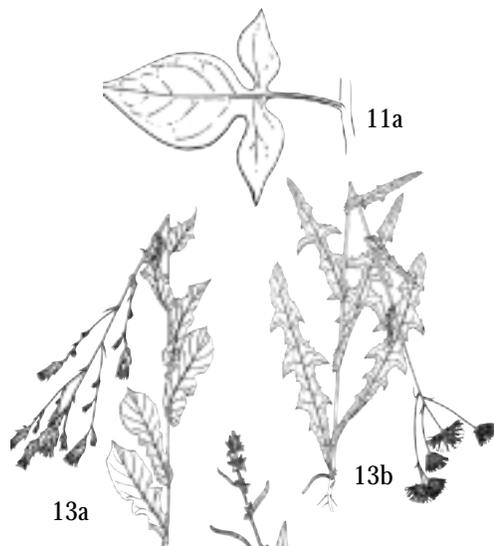
Emergent Dicots, lower leaves alternate and lobed or divided



- 1a. Lowest leaves lobed but the divisions not extending all the way to the midrib 2
- 1b. Lowest leaves divided into leaflets or lobed to the midrib or nearly so 20
- 2a. Lowest leaf blades fan-shaped in outline, nearly as wide or wider than long 3
- 2b. Lowest leaf blades strap- to arrow-shaped, definitely longer than wide 11
- 3a. Plants vine-like with spiraling tendrils at branch tips *Echinocystis*
- 3b. Plants not vine-like 4
- 4a. Stem and leaves with stiff spines *Oplopanax*
- 4b. Plants not stiff-spiny 5
- 5a. Plants with crystal-like glands or gland-tipped hairs in the inflorescence 6
- 5b. Plants without glands 10
- 6a. Lowest leaf blades lobed ca. 1/3 the way to the midvein; fruit with hooked bristles *Xanthium*
- 6b. Lowest leaf blades lobed at least 1/2 way to the midvein 7
- 7a. Stems arising from spreading rhizomes *Trautvetteria*
- 7b. Plants with branched or fibrous roots, not rhizomatous 8
- 8a. Stems hollow; flowers hood-shaped *Aconitum*
- 8b. Stems solid; flowers dish- or vase-shaped 9
- 9a. Upper root woody, without rice-like bulbs *Geranium*
- 9b. Upper root scarcely woody; bulbs usually present *Suksdorfia*
- 10a. Leaves without hair or with straight hairs *Ranunculus*
- 10b. Leaves with star-shaped hairs *Sidalcea*



Key 5B: Dicots with Alternate, Divided Leaves



- 11a. Vine with weak, climbing stems, often woody at the base *Solanum*
- 11b. Plants not vines, often with erect stems 12

- 12a. Sap milky; flowers in dandelion-like heads 13
- 12b. Sap clear; flowers not dandelion-like 14

- 13a. Flower heads with ≤ 55 flowers or seeds *Lactuca*
- 13b. Flower heads with > 80 flowers or seeds *Sonchus*

- 14a. Leaves somewhat thick and juicy; white flakes on stems or lower leaf surfaces (Family Chenopodiaceae) 15
- 14b. Leaves not succulent, sometimes white-hairy but without white flakes 17



- 15a. Seeds enclosed by a pair of triangular bracts *Atriplex*
- 15b. Seeds enclosed by a 1- or 5-parted calyx 16

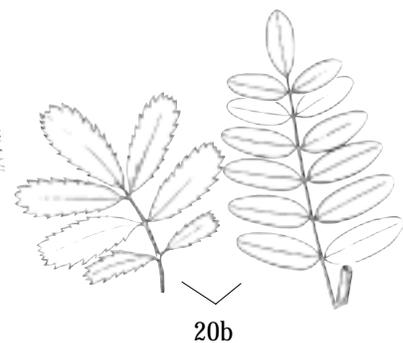
- 16a. Calyx of 1 bract-like segment *Monolepis*
- 16b. Seeds enclosed in a 5-lobed calyx *Chenopodium*

- 17a. Leaves densely white-hairy at least beneath *Artemisia*
- 17b. Leaves sparsely hairy or without hair 18

- 18a. Flowers in aster-like heads; seeds with long bristles ... *Senecio*
- 18b. Flowers not aster-like; seeds and fruits without long bristles 19

- 19a. Leaves evenly lobed along the margins *Rorippa*
- 19b. Leaves lobed only near the base *Rumex*

- 20a. Lower leaves with 3 or more divisions arranged like the fingers of a hand (palmate) 21
- 20b. Lower leaves pinnately divided or lobed (lobes > 3) 41



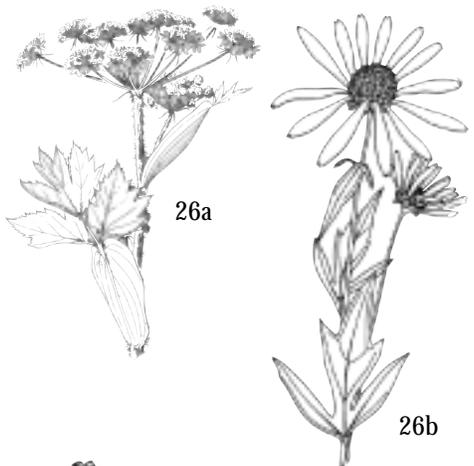


21a. Leaves divided into leaflets joined to the leaf axis by a short stalk 22
 21b. Leaves lobed to the midrib or nearly so but not divided into distinctly stalked leaflets..... 33

22a. Leaflets 3 23
 22b. Leaves with >3 leaflets..... 31

23a. Leaflets with entire margins 24
 23b. Leaflets with toothed or lobed margins 25

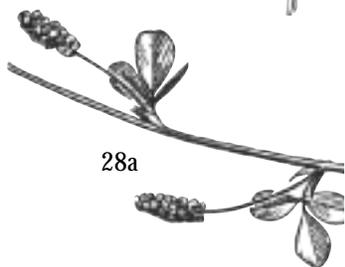
24a. Stipules (wing-like appendages where petiole attaches to stem) present *Thermopsis*
 24b. Stipules absent; plants usually growing in saturated peat *Menyanthes*



25a. Plants usually >70 cm tall 26
 25b. Plants <70 cm tall 27

26a. Leaf stalks with dilated bases (like celery stalks) .. *Heracleum*
 26b. Leaf stalks little expanded at the base *Rudbeckia*

27a. Flowers and fruits in head-like clusters 28
 27b. Flowers and fruits long-stalked 29

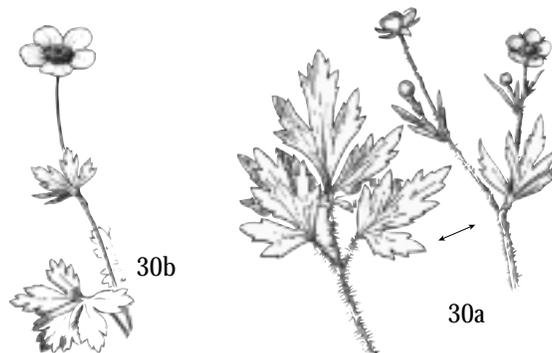


28a. Flowers yellow *Medicago*
 28b. Flowers white, pink or purple *Trifolium*

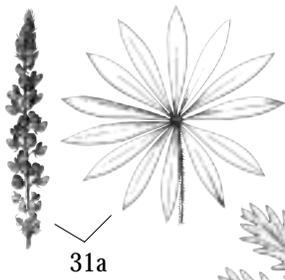
29a. Leaflets shallowly to deeply toothed but not lobed .. *Potentilla*
 29b. Leaflets lobed as well as toothed 30



30a. Fruit a globose to cylindrical cluster of seeds (achenes)..... *Ranunculus*
 30b. Fruit cup-shaped, divided into many chambers, each opening at the top *Trollius*



Key 5B: Dicots with Alternate, Divided Leaves



31a

31a. Leaflets with entire margins *Lupinus*

31b. Leaflets with toothed or lobed margins 32

32a. Leaflets toothed or shallowly lobed *Potentilla*

32b. Leaflets deeply lobed as well as toothed *Ranunculus*



32a

33a. Leaves lance-shaped, longer than wide, lobed only at the base 34

33b. Leaves lobed all around, nearly as wide or wider than long ... 35



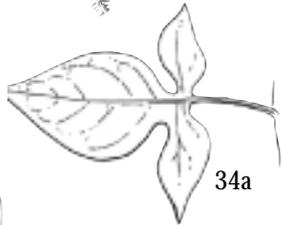
32b

34a. Plants with lax, twining stems; fruit a berry *Solanum*

34b. Stems erect or ascending, not twining; fruit a long capsule *Cardamine*

35a. Plants with crystal-like glands or gland-tipped hairs in the inflorescence 36

35b. Plants without glands in the inflorescence 38



34a

36a. Stems not at all hollow; inflorescence not long and slender *Geranium*

36b. Stems hollow at least at the base; inflorescence long and slender 37



34b

37a. Flowers with a conical spur >1 cm long projecting backward *Delphinium*

37b. Flowers hood-like but without a spur *Aconitum*

38a. Leaves with star-shaped hairs *Sidalcea*

38b. Leaves with straight hairs or hair lacking 39



36a

39a. Plants arising from spreading rhizomes *Trautvetteria*

39b. Plants fibrous-rooted, without rhizomes 40



37a



37b



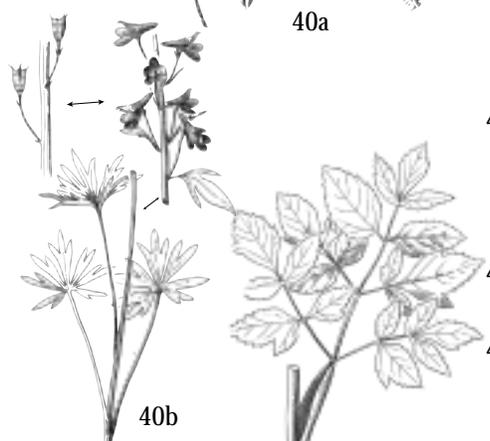
38a



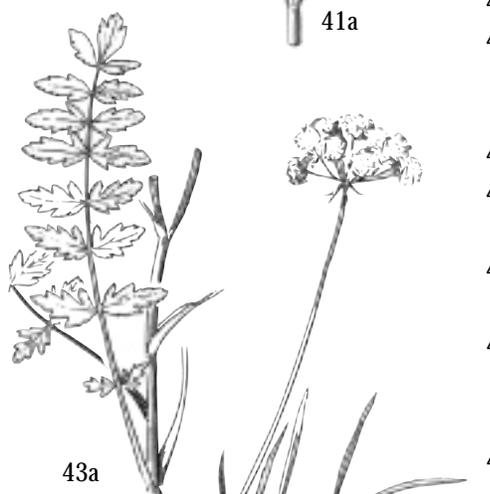
39a



40a. Fruit a globose to cylindrical cluster of seeds (achenes)..... **Ranunculus**



40b. Fruit cup-shaped, divided into 3 chambers, each opening at the top **Delphinium**



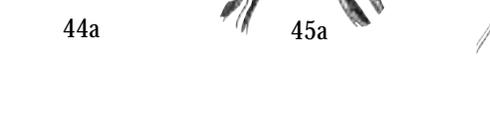
41a. Lower portion of leaf petiole dilated with parallel veins (like the base of a celery stalk); branches of the inflorescence all united at their bases like the spokes of an umbrella (Family Apiaceae) 42



41b. Inflorescence not an umbel; leaf petioles little expanded at the base (sometimes leaf-like bases clasp the stem but they do not have parallel veins) 48



42a. Lowest leaves only once divided into toothed or lobed leaflets (once pinnate) 43



42b. Lowest leaf divisions divided again into lobed or toothed leaflets (twice pinnate) 44



43a. Leaflets lance-shaped, some lobed **Berula**

43b. Leaflets linear, >5 times as long as wide, merely toothed **Sium**



44a. Lower portion of stem purple-spotted .. **Conium** (poisonous)



44b. Stems not spotted 45



45a. Base of stem widened with hollow chambers or plant bearing purplish bulblets in the inflorescence ... **Cicuta** (poisonous)



45b. Plants without bulblets; stem base not much widened or with hollow chambers 46



46a. Fruit club-shaped, 4-5 times as long as wide **Osmorhiza**



46b. Fruit elliptic in outline, 1-3 times as long as wide 47



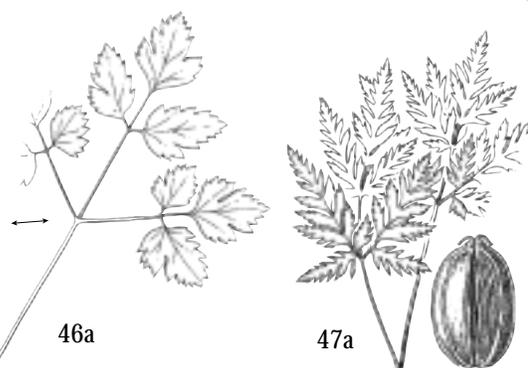
47a. Fruit nearly round in cross-section **Ligusticum**



47b. Fruit flattened **Angelica** or **Conioselinum**



46a



47a



47b

Key 5B: Dicots with Alternate, Divided Leaves



48a



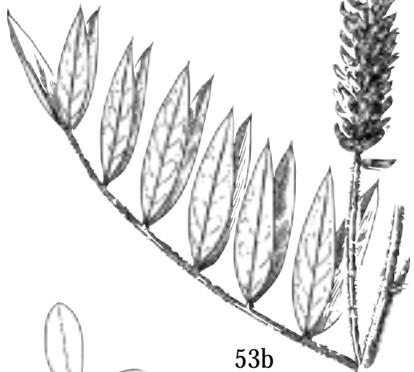
50a



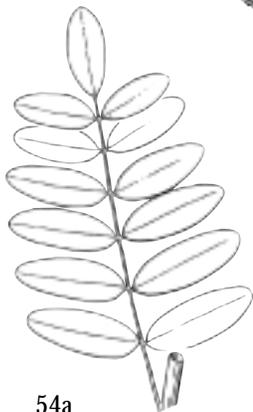
50b



53a



53b



54a



55a



55b



56a

- 48a. Leaves with needle-like, spine-tipped lobes *Navarettia*
- 48b. Leaves wider and not spine-tipped 49

- 49a. Lowest leaf divisions 1 or 2 times again divided into stalked leaflets 50
- 49b. Lowest leaves only once divided into lobes or leaflets that may be lobed or toothed but not stalked 51

- 50a. Flowers with showy petals; fruit cup-shaped, composed of segments united almost to their tips *Aquilegia*
- 50b. Flowers without petals; fruit of seed-like achenes united only at their base *Thalictrum*

- 51a. Leaflets or primary lobes of the lowest leaves with smooth margins 52
- 51b. Leaflets or primary lobes with ragged or toothed margins 56

- 52a. Leaves and stems with crystal-like glands or gland-tipped hairs 53
- 52b. Herbage not glandular 54

- 53a. Flowers saucer-shaped; fruit a smooth capsule *Polemonium*
- 53b. Flowers pea-like; fruits with hooked bristles *Glycyrrhiza*

- 54a. Stems erect, plants mostly >20 cm high *Astragalus*
- 54b. Stems lax and trailing or ascending 55

- 55a. Leaflets hairy at the base on the margin *Lotus*
- 55b. Plants succulent and hairless *Floerkia*

- 56a. Plants ≥ 1 m tall; flowers sunflower-like *Rudbeckia*
- 56b. Plants usually <1 m tall; flowers not like sunflowers 57

- 57a. Leaves sparsely to densely hairy (sometimes only on the veins) 58
- 57b. Leaves hairless 60

- 58a. Base of leaf stalk with leaflet-like stipules that clasp the stem 59
- 58b. Stem leaves without stipules *Rorippa*

- 59a. Seeds (achenes) hairy; terminal leaflet usually wider than the ones below *Geum*
- 59b. Seeds without hair; terminal leaflet about as wide as the ones below *Potentilla*

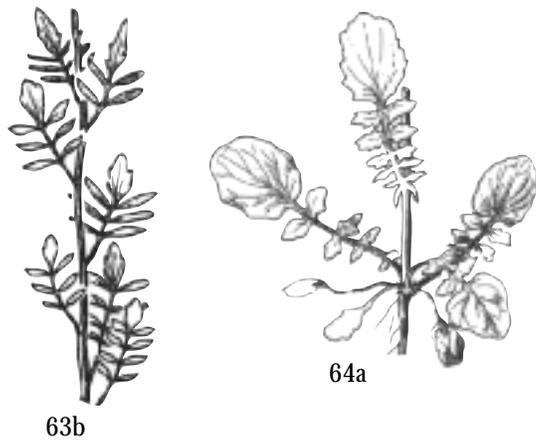
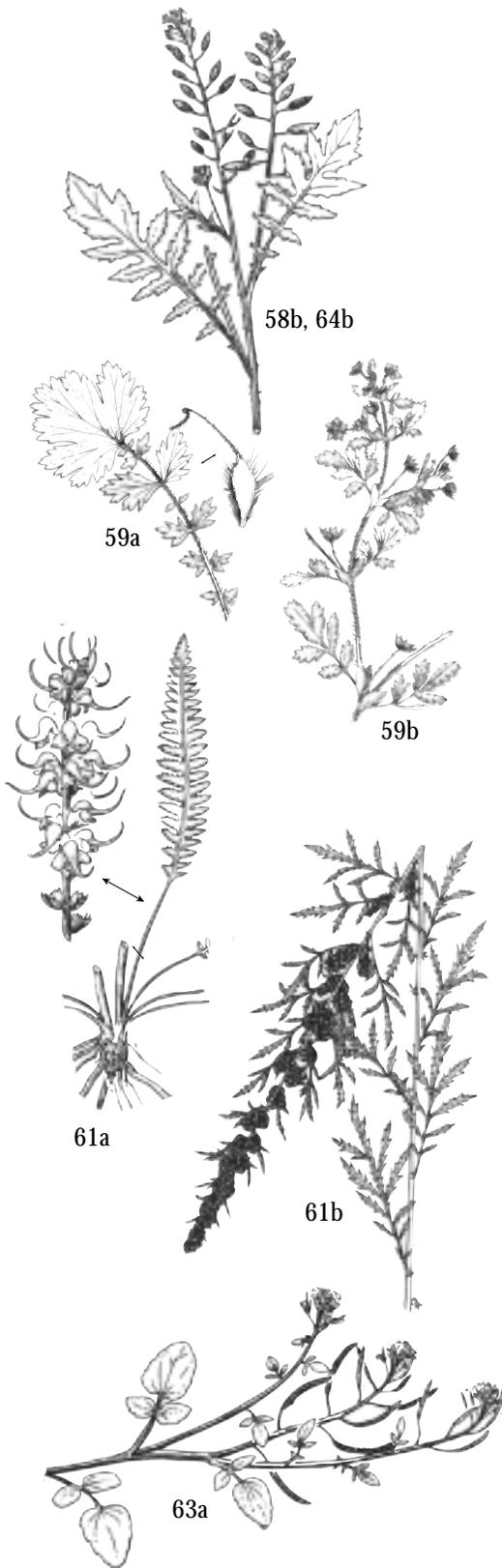
- 60a. Inflorescence with leaf-like bracts among the flowers or flower clusters 61
- 60b. Flowers not subtended by bracts (Family Brassicaceae) 62

- 61a. Perennial; cluster of basal leaves present with flowering and fruiting stems *Pedicularis*
- 61b. Biennial; basal leaves absent from flowering and fruiting stems *Artemisia*

- 62a. Flowers white 63
- 62b. Flowers yellow 64

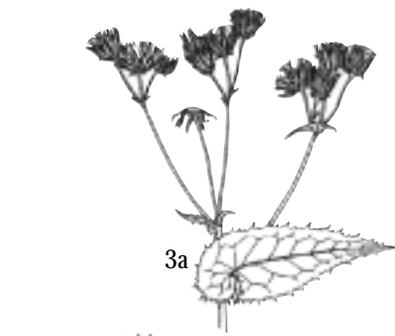
- 63a. Stems lax and trailing, usually in water *Nasturtium*
- 63b. Stems erect or ascending *Cardamine*

- 64a. Fruits >15 mm long, erect, (i.e., almost vertical) *Barbarea*
- 64b. Fruits <15 mm long, spreading or arching out and up *Rorippa*



Key 5C

Emergent Dicots, lower leaves alternate with entire or toothed margins



1a. Lower leaves with toothed, shallowly lobed or spiny margins 2

1b. Lower leaves with entire margins (margins sometimes wrinkled) 33

2a. Leaves with spines on midveins or margins 3

2b. Leaves not spiny 4

3a. Plants with milky sap *Sonchus*

3b. Plants with clear sap *Cirsium*

4a. Plants essentially without hair below the inflorescence (herbage may be mealy with white flakes) 5

4b. Plants with some hair on leaves or stems 23

5a. Lower leaf blades round to triangular in outline, as wide as long or nearly so 6

5b. Lower leaf blades linear to lance-shaped or elliptic, longer than wide 13

6a. Flowers yellow, clustered in aster-like heads *Senecio*

6b. Flowers not aster-like 7

7a. Stems prostrate *Chrysosplenium*

7b. Stems erect or lax but not prostrate 8

8a. Flowers few, long-stalked in a terminal inflorescence 9

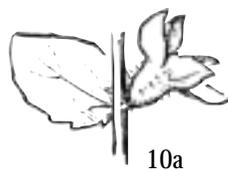
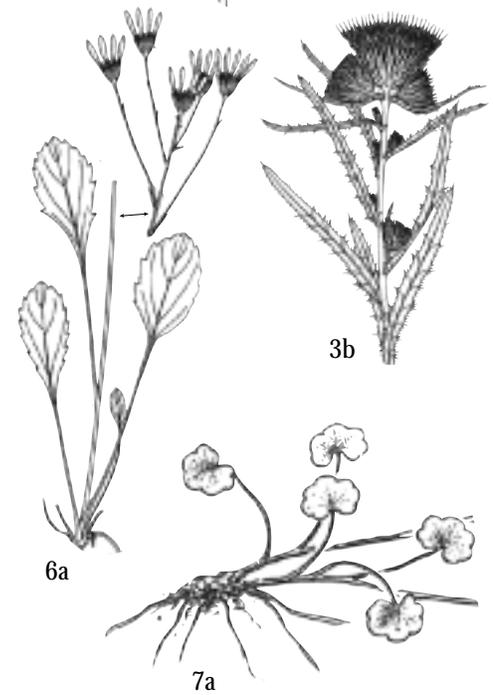
8b. Flowers without stalks, born in upper leaf axils 10

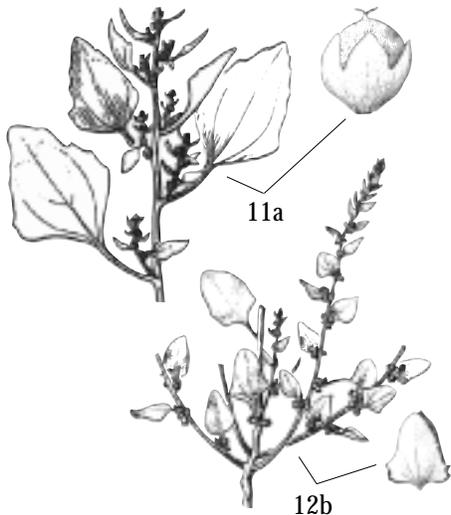
9a. Flowers violet-shaped; seeds contained in a 3-parted capsule *Viola*

9b. Flowers saucer-shaped; seeds born in a globose cluster *Ranunculus*

10a. Flowers solitary in upper leaf axils *Heterocodon*

10b. Flowers in dense clusters in upper leaf axils (Family Chenopodiaceae) 11



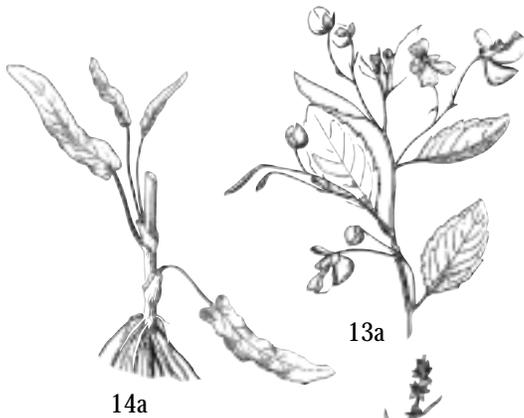


- 11a. Seeds enclosed in the 5-lobed calyx *Chenopodium*
 11b. Seeds enclosed in a pair of triangular bracts 12

- 12a. Stems succulent and juicy *Suckleya*
 12b. Stems not succulent *Atriplex*

- 13a. Stems succulent and juicy *Impatiens*
 13b. Stems not succulent 14

- 14a. Stems with membranous sheaths (stipules) at point of attachment *Rumex*
 14b. Stems without sheathing stipules 15



- 15a. Flowers and fruits green, clustered in axils of upper leaves *Atriplex*
 15b. Flowers colored, not clustered in leaf axils 16

- 16a. Uppermost leaves deeply lobed 17
 16b. Upper leaves not lobed 18

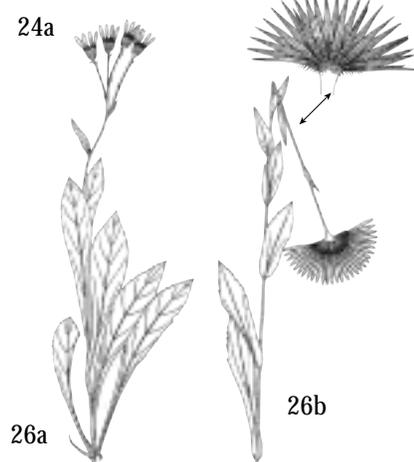
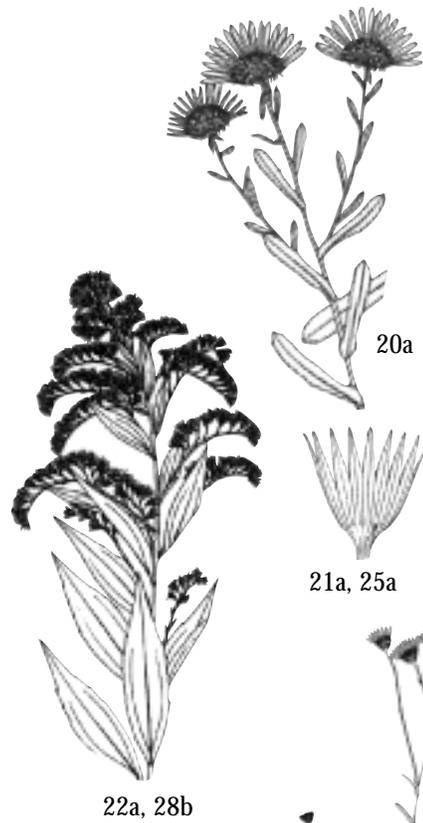
- 17a. Flowers not aster-like; leaf stalks expanded at the base like a celery stalk *Zizia*
 17b. Flowers clustered in aster-like heads; leaf petioles not expanded at the base *Senecio*

- 18a. Sap milky; flowers blue, clustered in dandelion-like heads *Lactuca*
 18b. Sap clear; flowers yellow or white, not dandelion-like 19

- 19a. Flowers white in a highly-branched inflorescence, not aster-like *Lepidium*
 19b. Flowers yellow, clustered in aster-like heads 20



Key 5C: Dicots with Alternate, Entire Leaves



- 20a. Plants sticky, especially above *Grindelia*
- 20b. Plants not sticky 21

- 21a. Involucral bracts around flower heads of nearly the same length *Senecio*
- 21b. Involucral bracts of different lengths 22

- 22a. Flower heads >12 *Solidago*
- 22b. Flower heads <12 *Haplopappus*

- 23a. Flowers clustered in aster-like heads; seeds with long bristle-like hairs (pappus) on top (Family Asteraceae) 24
- 23b. Flowers not aster-like; seeds without pappus 29

- 24a. Stems with green, low ridges going down the stem from the point of leaf attachment *Helenium*
- 24b. Stems without longitudinal, low ridges 25

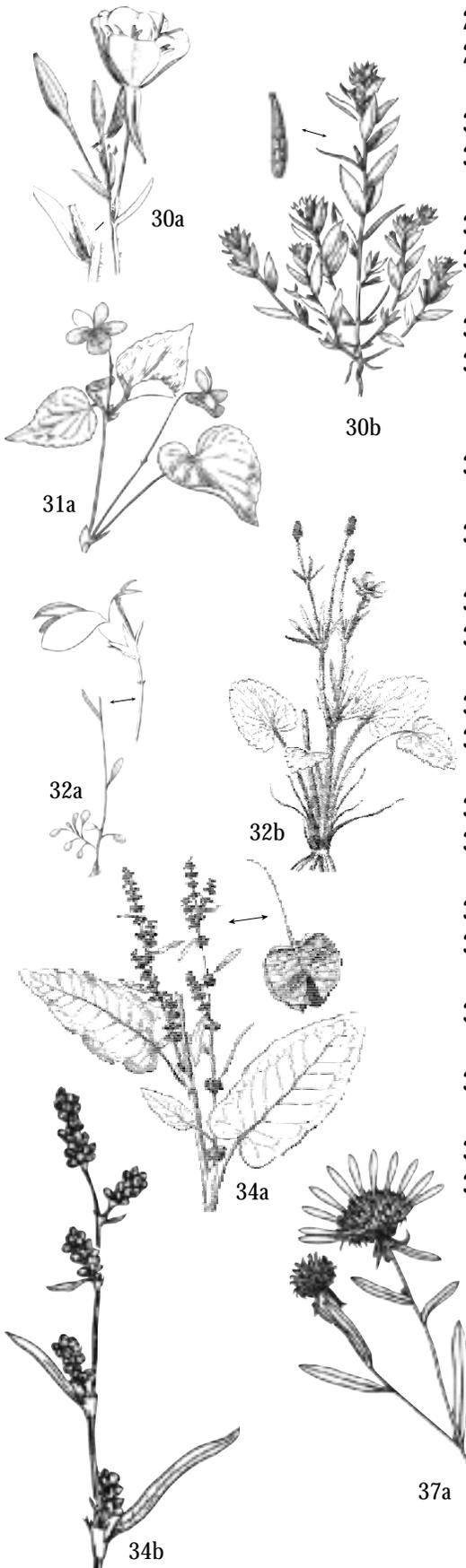
- 25a. Flower heads with nearly all involucral bracts of one length .. 26
- 25b. Flower heads with involucral bracts of many different lengths 27

- 26a. Flowers yellow *Senecio*
- 26b. Flowers white or blue *Erigeron*

- 27a. Flower heads with white, pink or blue strap flowers *Aster*
- 27b. Flowers heads yellow 28

- 28a. Flower heads >5 mm wide *Haplopappus*
- 28b. Flower heads ≤5 mm wide *Solidago*





- 29a. Flowers and fruits without stalks in leaf axils 30
- 29b. Flowers stalked 31
- 30a. Fruits ≥ 2 cm long; petals 8-15 mm long *Oenothera*
- 30b. Fruits ≤ 1 cm long; petals < 8 mm long..... *Boisduvalia*
- 31a. Flowers long-stalked from leaf axils *Viola*
- 31b. Flowers in an inflorescence at the ends of the stems 32
- 32a. Flowers numerous in a dense, narrow spike *Lobelia*
- 32b. Flowers usually 1 to several in an open, branched inflorescence *Ranunculus*
- 33a. Stems with membranous sheaths (stipules) at point of attachment (Family Polygonaceae) 34
- 33b. Stems without sheathing stipules 35
- 34a. Seed enclosed by 3 papery wings *Rumex*
- 34b. Seed enclosed by a 4- or 5-lobed calyx *Polygonum*
- 35a. Plants essentially without hair (sometimes white-flaky) 36
- 35b. Plants hairy, at least in the inflorescence 61
- 36a. Lower leaf stalks (petioles) lacking, very short or indistinct ... 37
- 36b. Lower leaves with well differentiated blade and petiole 49
- 37a. Plants sticky especially in the inflorescence *Grindelia*
- 37b. Plants not noticeably sticky 38
- 38a. Leaves leathery with rolled margins, shiny above; base of stem woody *Kalmia*
- 38b. Leaves not leathery; stems not woody at the base 39
- 39a. Sap milky; flowers clustered in dandelion-like heads *Lactuca*
- 39b. Sap clear; flowers not dandelion-like 40

Key 5C: Dicots with Alternate, Entire Leaves



- 40a. Leaves succulent, noticeably thick, sometimes nearly tubular 41
- 40b. Leaves thin 45

- 41a. Flowers and fruits without stalks in upper leaf axils 42
- 41b. Flowers and fruits stalked or not, subtended by leaves or leaf-like bracts 43

- 42a. Leaves tubular *Suaeda*
- 42b. Leaves more spoon-shaped *Portulaca*



- 43a. Flowers and fruits in a dense, narrow inflorescence that uncoils as it matures *Heliotropium*
- 43b. Inflorescence not both narrow and dense 44

- 44a. Root crown thick and scaly; flowers reddish with five sepals *Sedum*
- 44b. Root crown delicate; petals white with 2 sepals *Montia*



- 45a. Leaves opposite near base of the stem *Glaux*
- 45b. Leaves alternate throughout 46

- 46a. Leaves elliptic in outline *Centunculus*
- 46b. Leaves strap- to narrowly lance-shaped 47

- 47a. Flowers yellow, clustered in small aster-like heads *Euthamia* (syn)
- 47b. Flowers white or blue, not aster-like 48



- 48a. Flowers sessile in upper leaf axils *Downingia*
- 48b. Flowers stalked in a terminal inflorescence *Campanula*



- 49a. Flowers yellow, clustered in aster-like heads 50
- 49b. Flowers not clustered in aster-like heads 51

- 50a. Involucral bracts around flower heads of nearly the same length *Senecio*
- 50b. Involucral bracts of different lengths *Haplopappus*

- 51a. Stem leaf blades elliptic to broadly heart-shaped 52
- 51b. Stem leaf blades strap- to narrowly lance-shaped or divided into strap-shaped segments 55

- 52a. Stems with a solitary leaf and flower *Parnassia*
- 52b. Stems with >1 leaf and >1 flower 53

- 53a. Stems erect; leaf blades broader at the base than the tip *Atriplex*
- 53b. Stems prostrate or ascending; leaf blades more elliptic 54

- 54a. Leaves succulent and juicy *Portulaca*
- 54b. Leaves thin *Amaranthus*

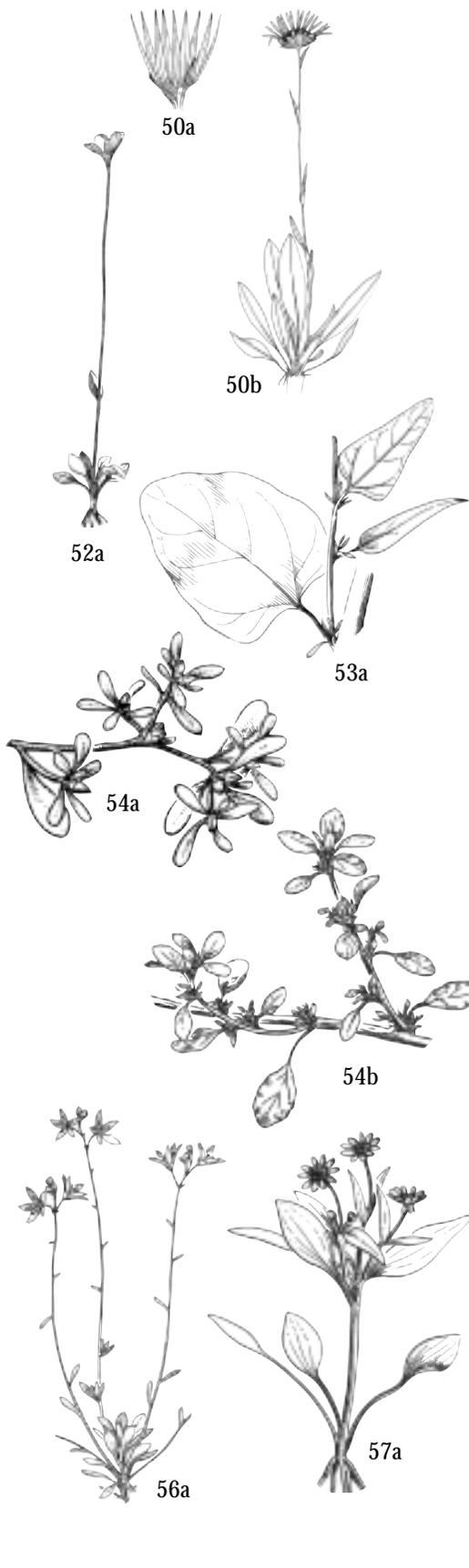
- 55a. Lowest flowers subtended by a small leaf-like bract 56
- 55b. Individual flowers without bracts 59

- 56a. Upper leaves succulent and nearly tubular *Montia*
- 56b. Upper leaves thin and not tubular 57

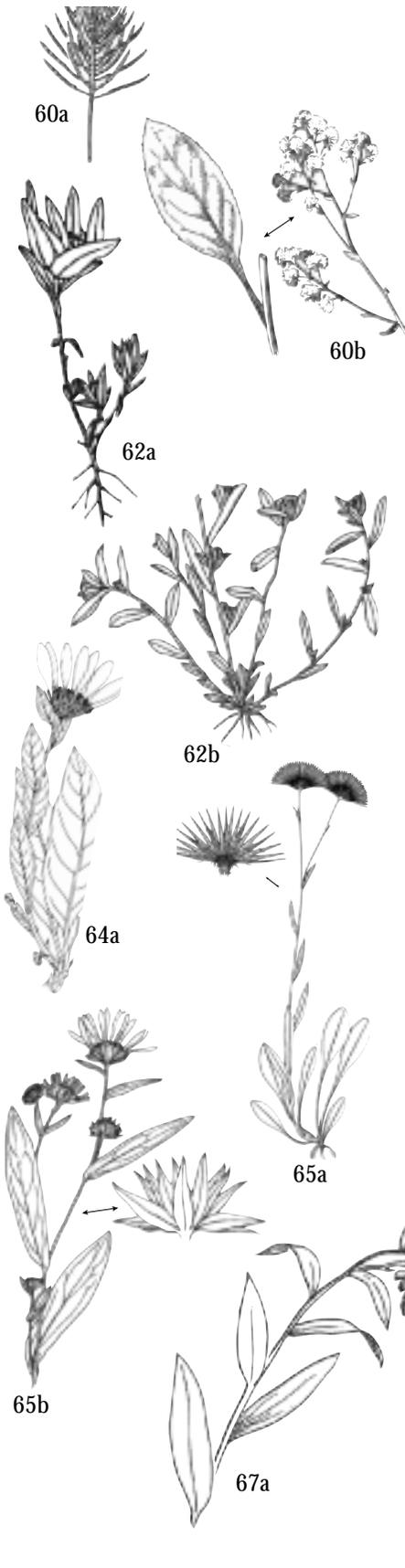
- 57a. Flowers yellow; fruit a globose cluster of seeds ... *Ranunculus*
- 57b. Flowers white or blue; fruit a capsule containing the seeds (Family Campanulaceae) 58

- 58a. Flower with 3 larger and 2 smaller lobes *Lobelia*
- 58b. Flower with 5 identical lobes *Campanula*

- 59a. Fruit capsule enclosed in the persistent 5-lobed calyx *Mertensia*
- 59b. 4-lobed calyx falling away from fruit capsule at maturity 60

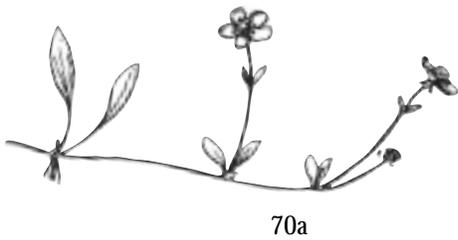


Key 5C: Dicots with Alternate, Entire Leaves



- 60a. Fruit long and tubular *Thelypodium*
- 60b. Fruit nearly round in outline *Lepidium*
- 61a. Leaves and stems white-wooly 62
- 61b. Herbage not so densely hairy as to be wooly 63
- 62a. Leaves clustered around the flower head; lower stem leaves dried or lacking..... *Psilocarphus*
- 62b. Leaves spaced more evenly along the stem..... *Gnaphalium*
- 63a. Flowers clustered in aster-like heads 64
- 63b. Flowers not clustered in aster-like heads..... 66
- 64a. Flower heads >2 cm wide *Wyethia*
- 64b. Flower heads smaller 65
- 65a. Most involucre bracts ca. the same height *Erigeron*
- 65b. Involucre bracts of different heights and overlapping like shingles *Aster*
- 66a. Leaf blades elliptic to broadly heart-shaped 67
- 66b. Leaf blades strap- to narrowly lance-shaped 68
- 67a. Flowers in a nodding, terminal inflorescence *Mertensia*
- 67b. Flowers clustered in leaf axils *Amaranthus*
- 68a. Flowers is a narrow spike, each flower subtended by a colorful bract *Castilleja*
- 68b. Flowers not subtended by colorful bracts 69
- 69a. Flowers and fruits without stalks, inconspicuous *Bassia* or *Kochia*
- 69b. Flowers and fruits stalked (sometimes short) 70

70a. Flower stalks long, solitary from rooting leaf nodes *Ranunculus*



70b. Flowers short-stalked in an inflorescence above the leaves 71

71a. Fruit a hairy calyx enclosing about 4 seeds (Family Boraginaceae) 72

71b. Seeds enclosed in a long capsule not enclosed by the calyx 73

72a. Flowers blue; seeds smooth *Myosotis*

72b. Flowers white; seeds wrinkled or bumpy *Plagiobothrys*



72a

73a. Inflorescence (especially fruit) with unbranched hair *Epilobium*

73b. Herbage with star-shaped hairs *Draba*



72b

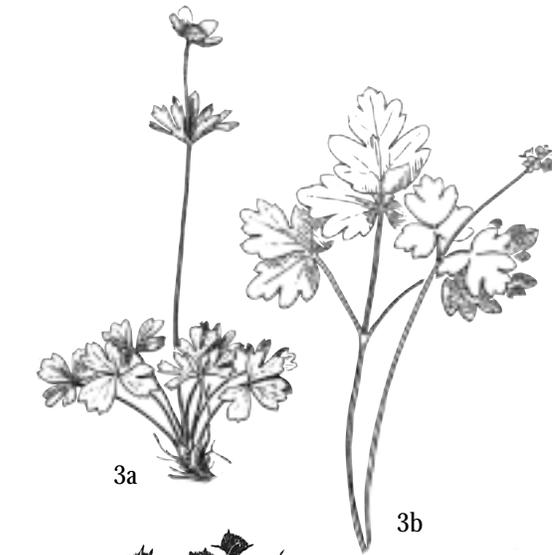
73a



73b

Key 5D

Emergent Dicots; lower leaves opposite or whorled; leaf margins toothed, divided or lobed

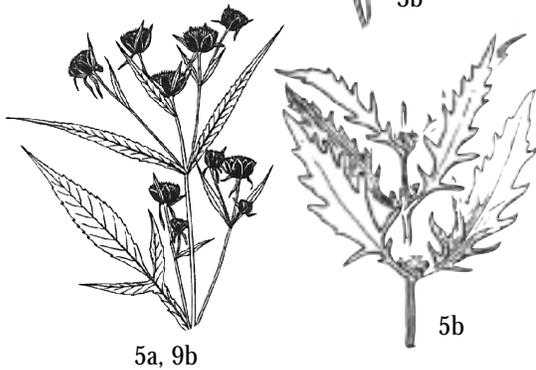


- 1a. Leaves divided into leaflets or lobed at least halfway to the midvein 2
- 1b. Leaves with toothed margins, not deeply lobed or divided into leaflets 10

- 2a. Stems with only 1 pair or whorl of leaves 3
- 2b. Well-developed stems with >1 pair or whorl of leaves 4

- 3a. Stem leaves usually 3, deeply lobed *Anemone*
- 3b. Stem leaves usually 2, divided into leaflets *Adoxa*

- 4a. Stem 4-angled 5
- 4b. Stem more-or-less round in cross-section 6



- 5a. Flowers yellow, clustered in stalked, aster-like heads... *Bidens*
- 5b. Flowers white, not stalked, clustered around leaf nodes *Lycopodium*

- 6a. Stems prostrate, forming mats *Tribulus*
- 6b. Stems erect 7



- 7a. Leaves hairy, especially beneath; flowers and fruits in narrow spikes *Ambrosia*
- 7b. Leaves not hairy; inflorescences not narrow 8

- 8a. Flowers clustered in a hemispheric to pyramidal inflorescence, not aster-like *Valeriana*
- 8b. Flowers clustered in long-stalked, aster-like heads 9



- 9a. Leaflets linear with entire margins *Coreopsis*
- 9b. Leaflets lance-shaped with toothed margins *Bidens*





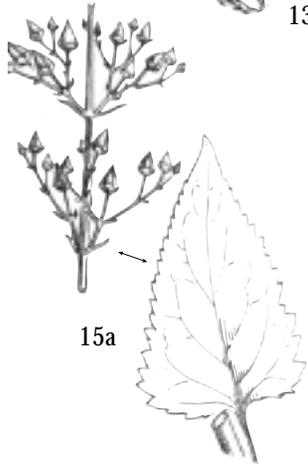
10a



12a



13a



15a



15b



17a



19a



19b

- 10a. Whorls of 3-4 leaves at each node *Eupatoriadelphus* (syn)
- 10b. Principle leaves 2 per node 11

- 11a. Stem 4-sided, square in cross-section at least below 12
- 11b. Stem round in cross-section without angles..... 25

- 12a. At least stems and petioles with stinging prickles *Urtica*
- 12b. Herbage with or without hair but without prickles 13

- 13a. Flowers yellow, clustered in aster-like heads *Bidens*
- 13b. Flowers not aster-like 14

- 14a. Inflorescence terminal, open; individual flower stalks at least 5 mm long 15
- 14b. Inflorescence congested, the flowers nearly stalkless or flowers few and born in axils of upper leaves 16

- 15a. Plants >40 cm tall *Scrophularia*
- 15b. Plants <40 cm tall *Veronica*

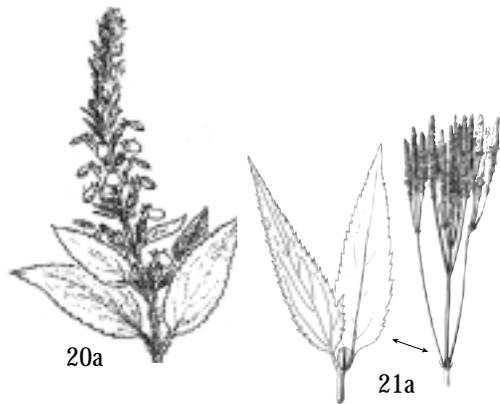
- 16a. Flowers and fruits in clusters at stem tips 17
- 16b. Flowers and fruits few to many around the upper leaf nodes 22

- 17a. Plants without hair below the inflorescence *Physostegia*
- 17b. Stems or leaves hairy (sometimes sparse) below the inflorescence 18

- 18a. Leaf stalks <5 mm long 19
- 18b. Lower leaf stalks >5 mm long 20

- 19a. Plants smelling of spearmint *Mentha*
- 19b. Herbage without a strong minty odor *Stachys*

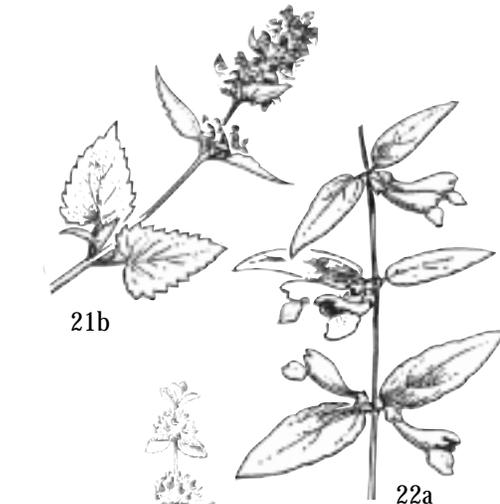
Key 5D: Dicots with Opposite, Divided Leaves



- 20a. Inflorescence with gland-tipped hairs *Teuchrium*
- 20b. Inflorescence without gland-tipped hairs 21

- 21a. Stem terminating in a cluster of finger-like flower spikes; plants without a minty odor *Verbena*
- 21b. Inflorescence not a cluster of spikes; plants smelling minty *Nepeta*

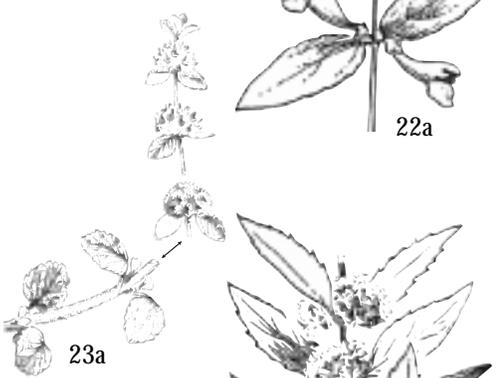
- 22a. Flowers 2 per leaf node *Scutellaria*
- 22b. Flowers several, surrounding each leaf node 23



- 23a. Stems white-wooly *Marrubium*
- 23b. Stems without hair or sparsely hairy 24

- 24a. Herbage strongly mint-smelling *Mentha*
- 24b. Herbage not much aromatic *Lycopus*

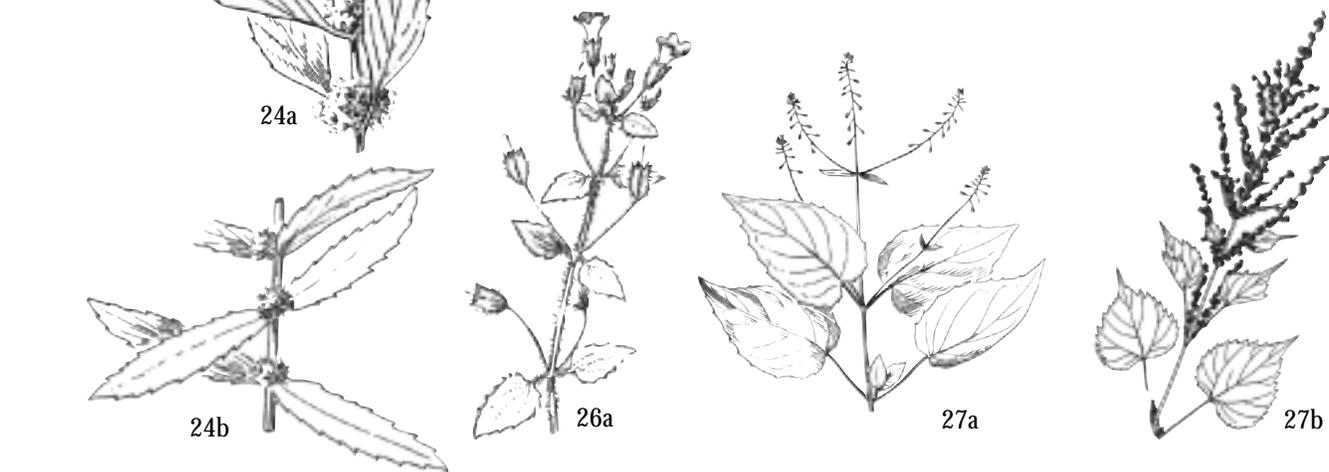
- 25a. Lower leaves with petioles at least 1/2 as long as the blade 26
- 25b. Leaf petioles absent or much shorter than the blades 28



- 26a. Plants with crystal-like glands or gland-tipped hairs in the inflorescence *Mimulus*
- 26b. Plants without glands 27

- 27a. Inflorescence subtended by 1 or 2 linear bracts with entire margins; stems usually <30 cm tall *Circaea*
- 27b. Bracts of the inflorescence lance-shaped with toothed margins; stems usually >30 cm tall *Iva*

- 28a. Flowers clustered in sunflower-like heads 29
- 28b. Flowers not sunflower-like 31





29a

29a. Upper leaves alternate on the stem *Helianthus*

29b. Upper leaves opposite each other 30

30a. Plants annual with weak fibrous roots *Bidens*

30b. Plants rhizomatous perennials *Arnica*



30a

31a. Fruit linear; flowers with separate petals *Epilobium*

31b. Fruit a globose capsule; petals united into a tube at the base 32



30b



31a



32a



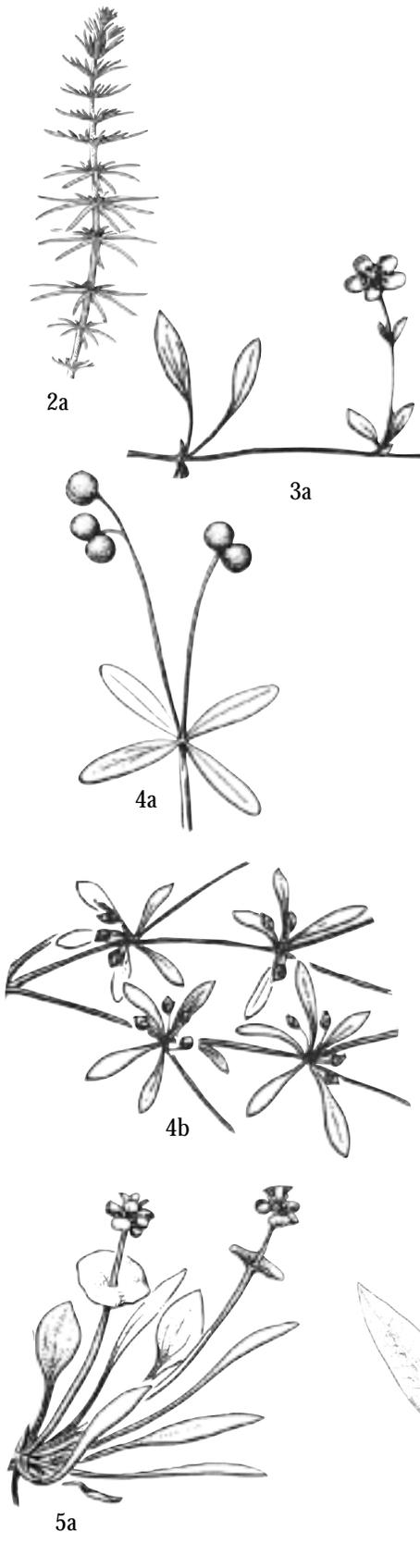
32b

32a. Calyx tube much longer than the lobes *Mimulus*

32b. Calyx divided at least halfway to the base *Veronica*

Key 5E

Emergent Dicots; lower leaves opposite or whorled; leaf margins entire



- 1a. Leaves in whorls of 3 or more from the same node 2
- 1b. Leaves 2 per node 5
- 2a. Flowers sessile in upper leaf axils *Hippuris*
- 2a. Flowers stalked 3
- 3a. Leaves with petioles *Ranunculus*
- 3b. Leaves without petioles 4
- 4a. Fruits 2-lobed *Galium*
- 4b. Fruits globose *Mollugo*
- 5a. Stems with only 1 pair of leaves *Claytonia* (syn)
- 5b. Well-developed stems with >1 pair of leaves 6
- 6a. Sap milky 7
- 6b. Sap clear 8
- 7a. Fruit >1 cm wide; herbage hairy at least in the inflorescence or on the leaf veins; flowers purplish *Asclepias*
- 7b. Fruit <1 cm wide; herbage without hair or nearly so; flowers white *Apocynum*
- 8a. Lower leaves with well-differentiated blade and petiole 9
- 8b. Lower leaf stalks (petioles) lacking, very short or indistinct ... 27
- 9a. Herbage hairy at least in the inflorescence or leaf stalks 10
- 9b. Plants without hair or nearly so 21
- 10a. Flowers clustered in sunflower-like heads 11
- 10b. Flowers not sunflower-like 13
- 11a. Inflorescence with crystal-like glands *Arnica*
- 11b. Plants not glandular 12



12a

12b

- 12a. Leaves alternate above *Helianthus*
 12b. Leaves opposite throughout *Helianthella*



14a

- 13a. Stems prostrate, at least toward the base, and rooting at the nodes 14
 13b. Stems not rooting at the nodes, often erect or ascending 15



14b

- 14a. Flowers several in a terminal, glandular inflorescence .. *Veronica*
 14b. Flowers 1 per leaf node; plants without glands ... *Ranunculus*



16a

- 15a. Plants with crystal-like glands or gland-tipped hairs in the inflorescence 16
 15b. Plants without glands 18

- 16a. Plants annual; stems arising singly *Melampyrum*
 16b. Plants perennial; well-developed plants branched at ground level 17



17a

- 17a. Stems hairless below the glandular inflorescence *Penstemon*
 17b. Stems hairy below the inflorescence *Silene*



17b

- 18a. Flowers and fruits stalkless, in a dense cluster at stem tips *Prunella*
 18b. Flowers and fruits stalked, often born in axils of upper leaves 19



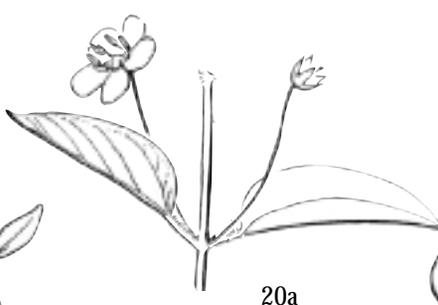
18a

- 19a. Leaves sparsely hairy but stems without hair 20
 19b. Stems hairy *Epilobium*



19b

- 20a. Leaf blades >2 cm long *Lysimachia*
 20b. Leaf blades <2 cm long *Stellaria*



20a



20b



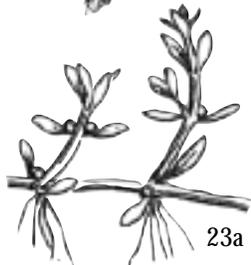
21a

- 21a. Uppermost leaves deeply lobed or divided *Valeriana*
- 21b. All leaves with entire margins 22



22a

- 22a. Flowers clustered in sunflower-like heads *Helianthus*
- 22b. Flowers not sunflower-like 23



23a

- 23a. Flowers and fruits without stalks in leaf axils *Elatine*
- 23b. Flowers and fruits stalked 24

- 24a. Flowers several and born in an inflorescence above the leaves 25
- 24b. One to several flowers on stalks or branches from the leaf axils 26



- 25a. Flowers with 2 sepals; plants of low elevations *Montia*
- 25b. Flowers with 5 sepals; plants of upper montane to alpine habitats *Swertia*



25a

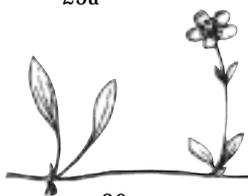
- 26a. Flowers 1 per leaf node *Ranunculus*
- 26b. Flowers >1 per node *Veronica*



25b

- 27a. Leaves or stems hairy at least in the inflorescence 28
- 27b. Plants without hair or nearly so 40

- 28a. Leaves stiff, sharp-pointed, <3 mm wide; plants forming cushions or mats *Phlox*
- 28b. Leaves softer, without a hard, sharp point, often >3 mm wide 29



26a

- 29a. Herbage with crystal-like glands or gland-tipped hairs, at least in the inflorescence 30
- 29b. Plants not glandular 36

- 30a. Leaves nearly round in outline; stems lax, rooting at the nodes *Bacopa*
- 30b. Leaves lance- to strap-shaped; stems erect or ascending 31



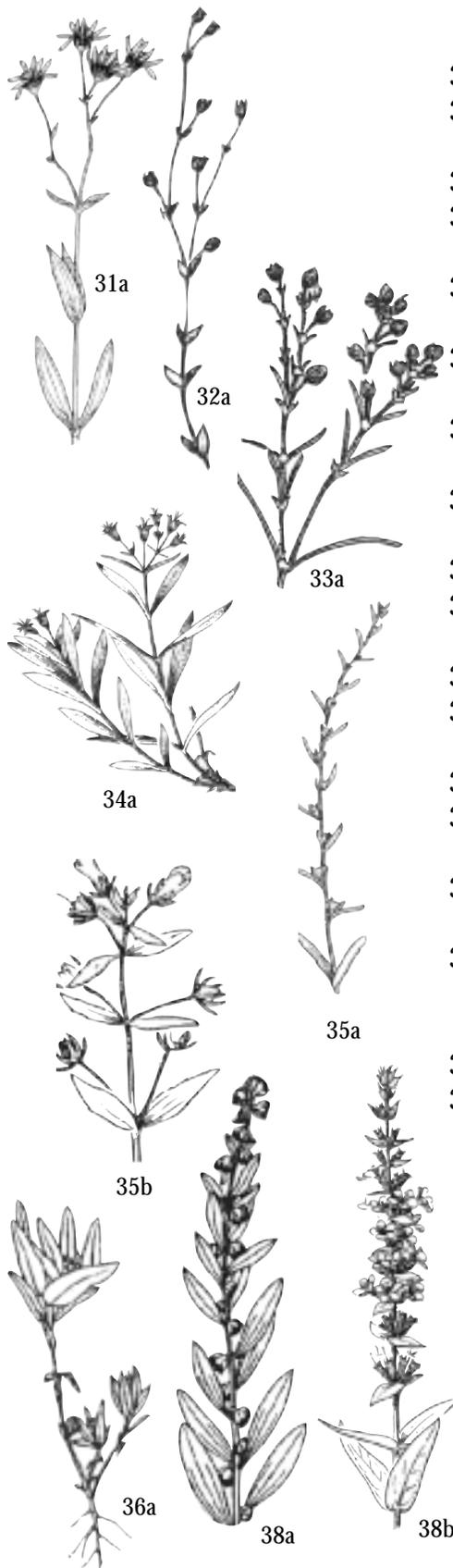
26b



28a



30a



- 31a. Flowers clustered in sunflower-like heads *Arnica*
 31b. Flowers not sunflower-like 32
- 32a. Leaves lance-shaped, 2 to 3 times as long as wide ... *Arenaria*
 32b. Leaves strap-shaped or linear, >3 times as long as wide 33
- 33a. Plants with whitish, papery stipules at the point where the
 leaves join the stem *Spergularia*
 33b. Plants without stipules 34
- 34a. Plants perennial; well-developed plants branched at ground
 level *Silene*
 34b. Plants annual; stems arising singly 35
- 35a. Upper leaves alternate; flowers without stalks *Veronica*
 35b. Upper leaves opposite; flowers stalked *Gratiola*
- 36a. Herbage densely covered with long, white hairs .. *Psilocarphus*
 36b. Herbage green, not white-wooly 37
- 37a. Flowers or flower heads without conspicuous stalks 38
 37b. Flowers or flower heads obviously stalked 39
- 38a. Flower heads inconspicuous, single in axils of upper, alter-
 nate leaves *Iva*
 38b. Flowers showy, several in axils of upper, reduced, opposite
 leaves (bracts) *Lythrum*
- 39a. Petals 4; fruits tubular, not enclosed in calyx *Epilobium*
 39b. Petals 5; fruits globose, partly enclosed in
 calyx *Moehringia* (syn)



40a

40a. Flowers and fruits in dense, thimble-shaped clusters on stalks from upper leaf axils *Lysimachia*

40b. Flowers and fruits solitary in axils of leaves or in inflorescences at the ends of the stems 41

41a. Individual flowers without stalks or stalks small and inconspicuous 42

41b. Flowers with evident stalks 46

42a. Stems prostrate, rooting at the nodes *Elatine*

42b. Stems usually erect, not rooting at the nodes 43

43a. Leaves egg-shaped, 1 to 2 times as long as wide 44

43b. Leaves strap-shaped, ≥ 3 times as long as wide 45

44a. Upper leaves alternate; flowers <5 mm long, in leaf axils *Glaux*

44b. Leaves all opposite; flowers >1 cm long on stem tips *Gentiana*

45a. Stems >20 cm tall *Lythrum*

45b. Stems ≤ 20 cm tall *Ammania* or *Rotala*

46a. Leaves with small dark dots on the surface and along the margins *Hypericum*

46b. Leaves without black dots 47

47a. Fruits linear, ca. 10 times as long as wide *Epilobium*

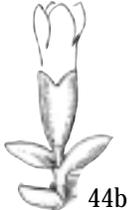
47b. Fruits 1 to 5 times as long as wide 48



44a



42a



44b



45a



45b



46a



47a



50a, 56a



51a



51b



52a



53a



54a



57a



57b

- 48a. Lower leaves narrowly lance-shaped to orbicular, <3 times as long as wide 49
- 48b. Lower leaves linear to strap-shaped, >3 times as long as wide 55
- 49a. Flowers born in axils of leaves on the upper half of the stem, these leaves not much smaller than those below 50
- 49b. Flowers born at the tips of leafy stems, sometimes subtended by reduced leaves 52
- 50a. Flowers several on branched stems from leaf axils.... *Veronica*
- 50b. Flowers 1 or 2 at each leaf node 51
- 51a. Fruits born on down-curved stalks *Anagalis*
- 51b. Fruits erect or spreading but not pendent *Stellaria*
- 52a. Calyx ≤ 4 mm long *Stellaria*
- 52b. Calyx > 5 mm long 53
- 53a. Lower, tubular portion of the calyx at least 1/2 as long as the lobes *Gentiana*
- 53a. Calyx divided nearly to the base 54
- 54a. Calyx ≤ 1 cm long *Gentianella* (syn)
- 54b. Calyx > 1 cm long *Eustoma*
- 55a. Stems lax and prostrate at least at the base 56
- 55b. Stems erect 58
- 56a. Fruit capsules flattened and notched or lobed on top; spikes of several flowers born in leaf axils *Veronica*
- 56b. Fruit capsules globose; flowers born only at stem tips or singly from leaf axils (Family Caryophyllaceae) 57
- 57a. Pairs of leaves united at their bases around the stem... *Sagina*
- 57b. Leaf pairs opposite but not united *Stellaria*

Key 5E: Dicots with Opposite, Entire Leaves



58a



59a



60a



61a



61b

58a. Largest leaves >3 mm wide and tapered to a long tip ***Gratiola***

58b. Largest leaves either narrower or not long-tapered (Family Gentianaceae) 59

59a. Lower 1/3 of calyx tubular ***Gentianopsis (syn)***

59b. Calyx divided to the base or nearly so 60

60a. Largest leaves on well-developed plants >2 mm wide ***Gentianella (syn)***

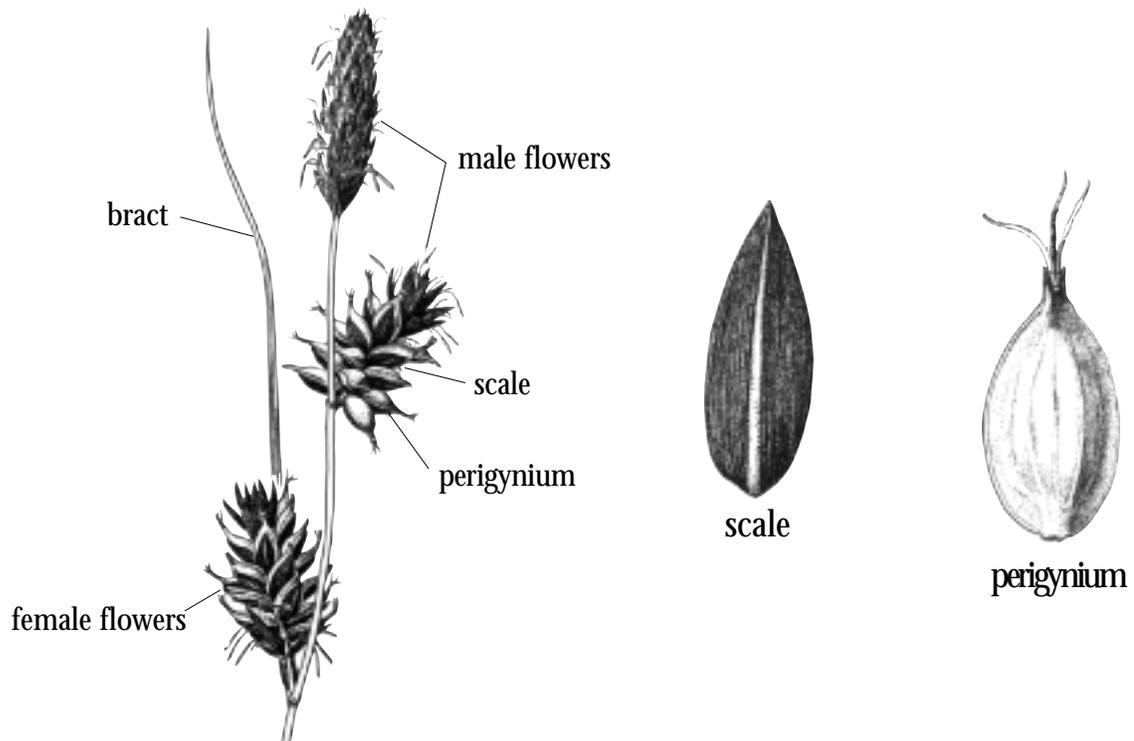
60b. Largest leaves ≤2 mm wide 61

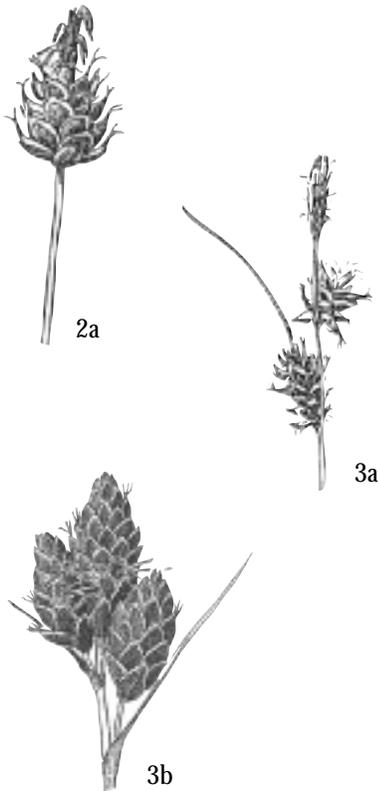
61a. Flowers tubular ***Centaureum***

61b. Flowers dish-shaped ***Lomatogonium***

Key to the Montana Species of Wetland *Carex* (Sedges)

In the genus *Carex* (sedges) the flowers are unisexual and arranged in unisexual or bisexual spikes. In bisexual spikes the male flowers are segregated into either the top or bottom portion. At least the lowest spike in the inflorescence is subtended by a leaf-like bract. Each flower is subtended by a papery, green to black scale. Male flowers consist of 3 stamens. Female flowers have an ovary enclosed in a papery, sac-like perigynium, often but not always with a narrow beak at the top. The seed (achene) is 2-sided when there are 2 stigmas and 3-sided when there are 3 stigmas.

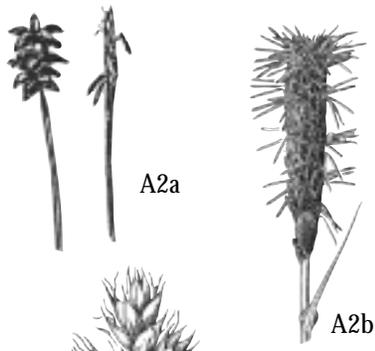




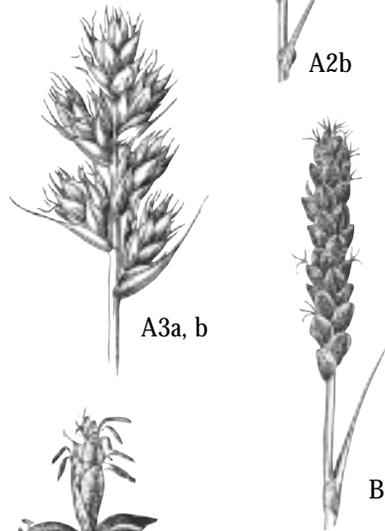
Carex bipartita, *C. capitata*, *C. heteroneura*, *C. illota*, *C. leporina*, *C. nelsonii*, *C. nigricans*, *C. pelocarpa*, *C. podocarpa*, *C. pyrenaica*, and *C. spectabilis* occur exclusively near or above treeline and are not included in the following key.

- 1a. Plants unisexual; flowers all male or all female . **Group A** (p. 57)
- 1b. Both male and female flowers on the same plant 2
- 2a. Stems with a solitary, terminal spike, male flowers above (plants with a tightly clustered head of several spikes may appear to have a solitary spike but will not key here **Group B** (p. 57)
- 2b. Spikes >1 per stem 3
- 3a. Terminal spike all male (sometimes a few perigynia at the base) and narrower than the female spikes below 4
- 3b. Terminal spike bisexual or all female, mostly similar to the lower ones 5
- 4a. Achene (seed) 3-sided; stigmas 3 **Group C** (p. 57)
- 4b. Achene 2-sided, coin- or lens-shaped; stigmas 2 **Group D** (p. 59)
- 5a. Achene (seed) 3-sided; stigmas 3 **Group E** (p. 60)
- 5b. Achene 2-sided, coin-shaped; stigmas 2 6
- 6a. Bisexual spikes with male flowers above the female (or all spikes unisexual) **Group F** (p. 61)
- 6b. Bisexual spikes with male flowers at the base (look for old anthers or anther stalks) **Group G** (p. 63)

Group A. Plants unisexual (dioecious)

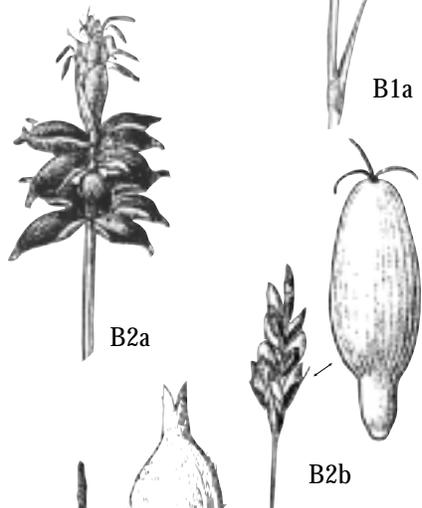


- 1a. Spike solitary 2
- 1b. Spikes >1, sometimes tightly clustered 3
- 2a. Leaves <1 mm wide; perigynia glabrous *C. gynocrates*
- 2b. Some leaves >1 mm wide; perigynia hairy *C. scirpoidea*
- 3a. Plants of peaty soil in fens; perigynia <3 mm long *C. simulata*
- 3b. Plants of mineral soil in wet meadows; perigynia >3 mm long *C. praegracilis*



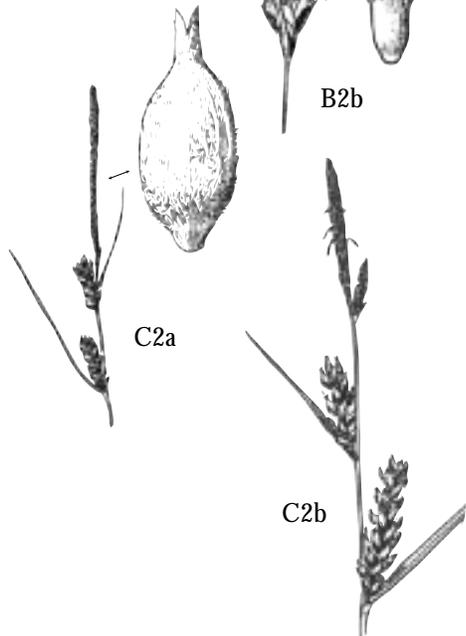
Group B. Stems with a solitary, terminal spike

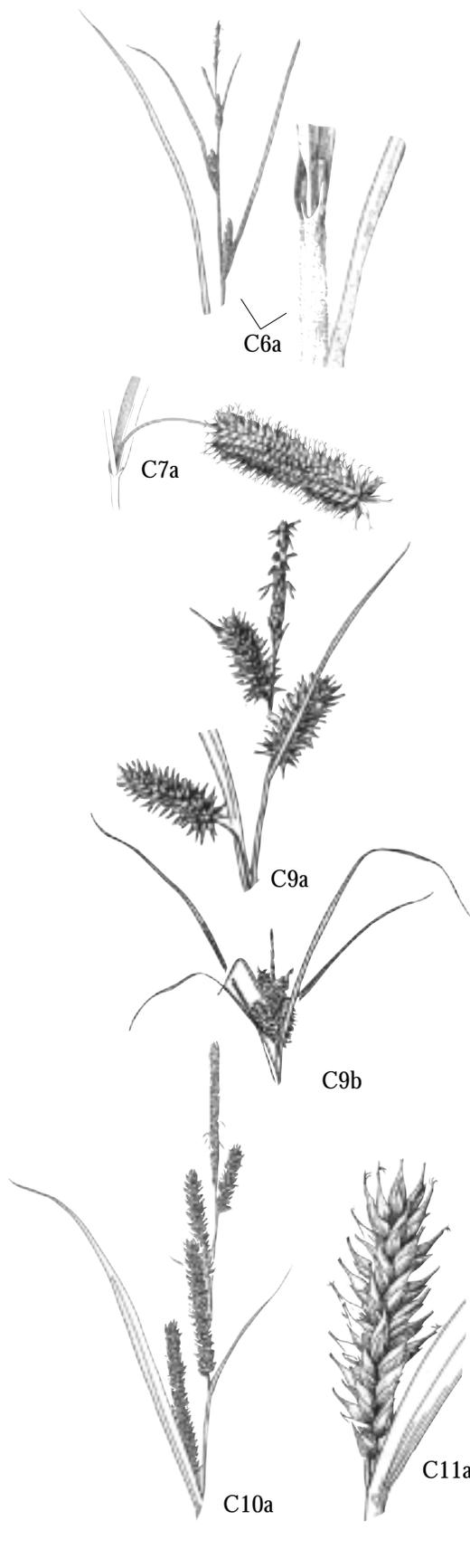
- 1a. Perigynia hairy *C. scirpoidea*
- 1b. Perigynia without hair 2
- 2a. Achene 2-sided; perigynia dark brown with a small beak, spreading at maturity *C. gynocrates*
- 2b. Achene 3-sided; perigynia greenish, beakless, not spreading *C. leptalea*



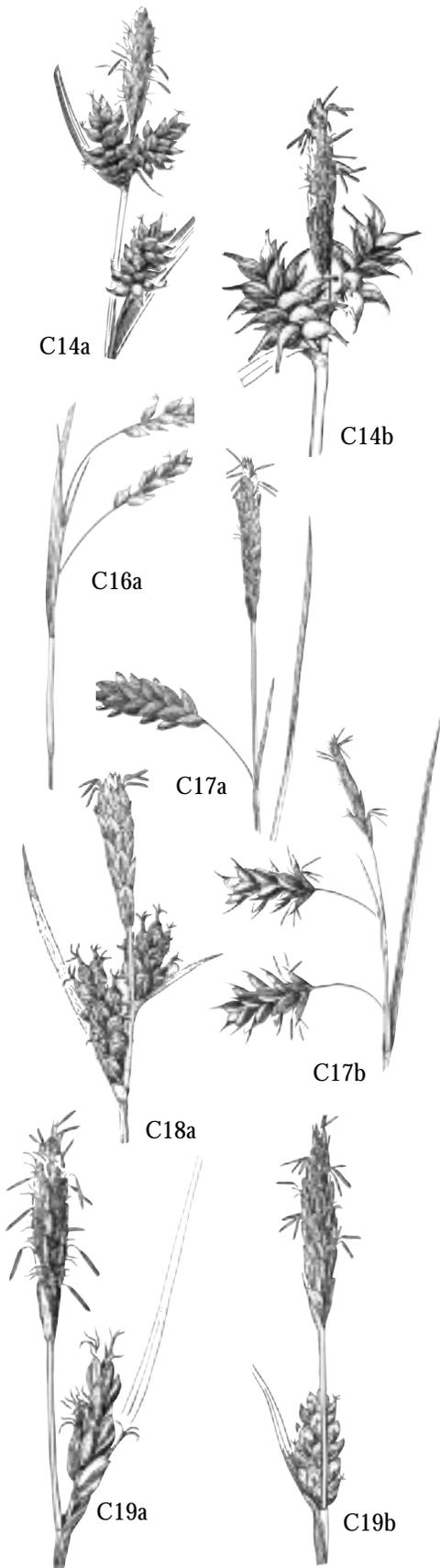
Group C. Plants with a narrow terminal male spike; achene 3-sided

- 1a. Body of perigynia hairy 2
- 1b. Perigynia without hair or with sparse hair on the margins .. 3
- 2a. Leaves 1-2 mm wide; wet organic soil of fens... *C. lasiocarpa*
- 2b. Leaves 2-5 mm wide; wet meadows *C. lanuginosa*
- 3a. Perigynia with a distinct beak ≥ 0.5 mm long 4
- 3b. Beak of perigynia not distinct, <0.5 mm long 15
- 4a. Terminal male spike of most plants >20 mm long 5
- 4b. Terminal male spike of most plants <20 mm long 12





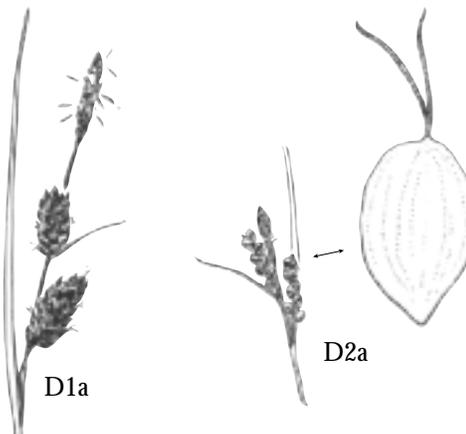
- 5a. Beak of perigynia with spreading tips as long as the lower tubular portion (sometimes broken off) 6
- 5b. Tips of perigynia beak shorter than the lower portion, little spreading 8
- 6a. Upper leaf sheaths densely hairy *C. atherodes*
- 6b. Leaf sheaths without hair or nearly so 7
- 7a. Female spikes on spreading or drooping branches ... *C. comosa*
- 7b. Female spikes erect or nearly so *C. laeviconica*
- 8a. Beak of perigynia ≥ 2 mm long 9
- 8b. Beak of perigynia 1-2 mm long 10
- 9a. Female spikes on spreading or drooping branches, female scales with awns *C. hystricina*
- 9b. Female spikes erect or nearly so; females scales unawned *C. retrorsa*
- 10a. Perigynia (including beak) < 3.5 mm long *C. amplifolia*
- 10b. Perigynia > 3.5 mm long 11
- 11a. Perigynia pointed sharply upward, \pm erect *C. vesicaria*
- 11b. Perigynia spreading at \pm right angles or pointed down *C. rostrata* or *C. utriculata*
- 12a. Perigynium beak at least as long as the body; lowest spike on spreading or drooping stalk *C. sprengei*
- 12b. Perigynium beak up to as long as the body; lowest spike not spreading or drooping 13
- 13a. Leaf (bract) subtending the lowest spike shorter than the inflorescence *C. luzulina*
- 13b. Leaf subtending the lowest spike longer than the inflorescence 14

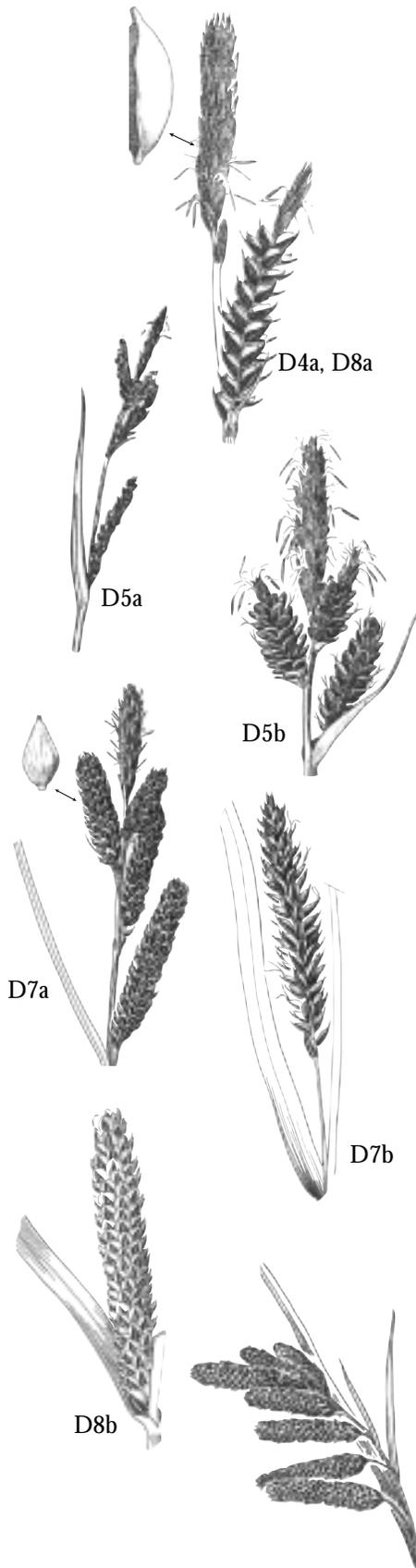


- 14a. Perigynia (including beak) 2-3.5 mm long, all spreading *C. viridula*
- 14b. Perigynia 3.5-7 mm long, the lower reflexed *C. flava*
- 15a. Lower spikes on spreading or drooping stalks..... 16
- 15b. Spikes erect or ascending..... 18
- 16a. Leaf-like bract subtending the lowest spike sheathing the stem for >5 mm *C. capillaris*
- 16b. Sheaths of bracts <4 mm long 17
- 17a. Terminal male spike 13-27 mm long *C. limosa*
- 17b. Terminal male spike 4-12 mm long *C. paupercula*
- 18a. Leaf surfaces hairy..... *C. torreyi*
- 18b. Leaf surfaces without hair 19
- 19a. Perigynia pale-waxy, minutely bumpy; peatlands *C. livida*
- 19b. Perigynia not waxy or bumpy; mostly mineral soil ... *C. crawei*

Group D Plants with a narrow terminal male spike; achene 2-sided

- 1a. Perigynia 3.5-4.0 mm long, lustrous *C. saxatilis*
- 1b. Perigynia <4 mm long, not lustrous 2
- 2a. Leaf-like bract subtending the lowest spike sheathing the stem for 3-12 mm; perigynia yellowish *C. aurea*
- 2b. Bracts sheathless 3



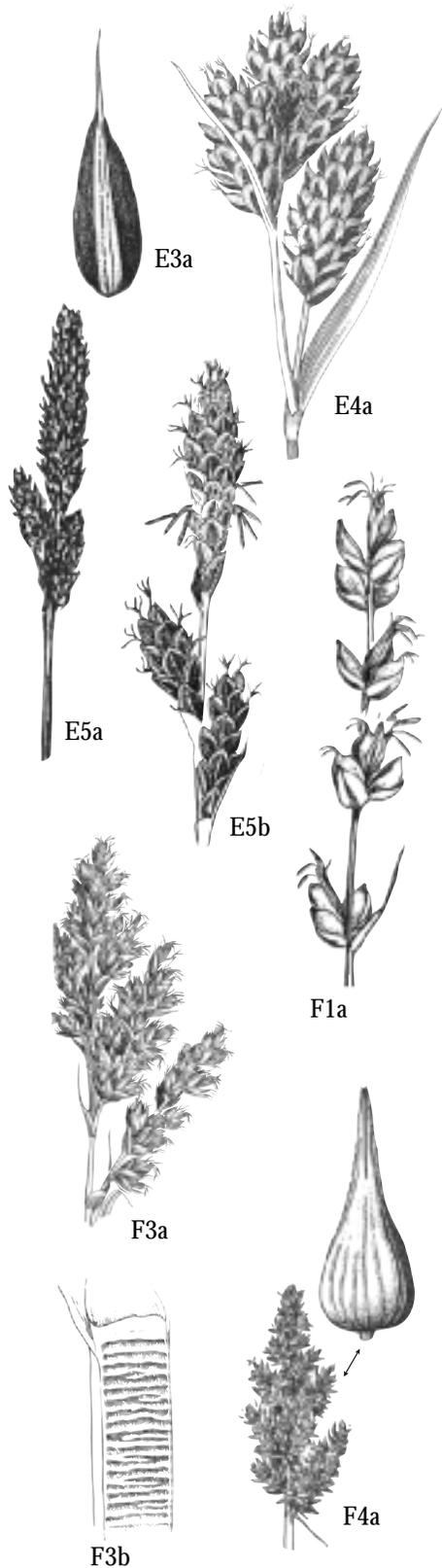


- 3a. Leaf-like bract subtending the lowest spike shorter than the inflorescence 4
- 3b. Lowest bract as long or exceeding the inflorescence 6
- 4a. Female scales longer than the perigynia *C. aperta*
- 4b. Female scales usually shorter than the perigynia 5
- 5a. Plants tussock-forming; female spikes >3 times as long as wide *C. prionophylla*
- 5b. Stems arising separately from rhizomes; female spikes <3 times as long as wide *C. scopulorum*
- 6a. Perigynia with raised veins apparent on the ventral (closest to the spike axis) face 7
- 6b. Perigynia without apparent veins on ventral face 8
- 7a. Plants forming distinct tussocks; spreading rhizomes lacking; leaves 2-4 wide *C. lenticularis*
- 7b. Plants rhizomatous; some leaves >4 mm wide *C. nebraskensis*
- 8a. Mature perigynia inflated, pillow-like; female scales mostly longer than the perigynia *C. aperta*
- 8b. Perigynia flattened; female scales shorter than the perigynia *C. aquatilis*

Group E Achene 3-sided; bisexual spikes with male flowers below female

- 1a. Lower spikes drooping on long stalks *C. mertensii*
- 1b. Spikes sessile or on erect or ascending stalks 2
- 2a. Female spikes <10 mm long *C. media*, *C. norvegica*
- 2b. At least some female spikes >10 mm long 3

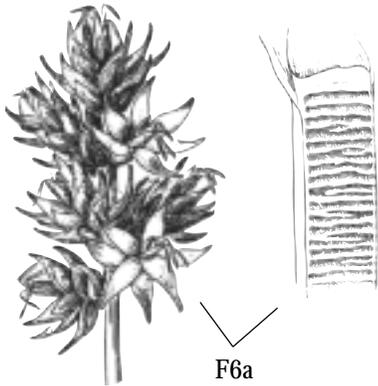




- 3a. Rhizomatous plants of peaty soils; stems arising singly; female scales with an awn tip *C. buxbaumii*
- 3b. Plants forming small clumps; female scales pointed but not awned 4
- 4a. Perigynia >3 mm long; plants montane to subalpine ... *C. atrata*
- 4b. Perigynia <3 mm long; plants montane or lower 5
- 5a. Terminal spike at least twice as wide as the lower ones; over 5000 ft in southwest MT *C. idaho*
- 5b. Terminal spike about as wide as lower ones *C. parryana*

Group F Achene 2-sided; spikes with male flowers above female

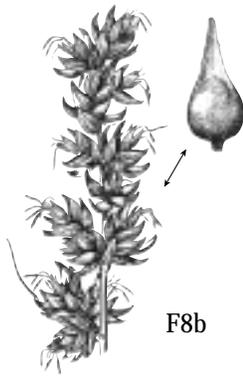
- 1a. Spikes well-separated, usually with 1-3 perigynia each *C. disperma*
- 1b. Spikes with >3 perigynia per spike 2
- 2a. Inflorescence branched below 3
- 2b. All spikes attached on the main inflorescence axis 5
- 3a. Leaf sheaths not cross-corrugate at the top *C. cusickii*
- 3b. Leaf sheaths with horizontal ridges at the top opposite the base of the blade 4
- 4a. Perigynia 4-5 mm long, the beak about as long as the body *C. stipata*
- 4b. Perigynia 3-4.5 mm long, the beak shorter than the body *C. vulpinoidea*



- 5a. Stems forming tussocks; creeping rhizomes lacking 6
- 5b. Stems arising singly or in small groups from rhizomes 9

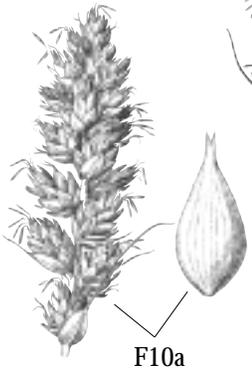
- 6a. Leaf sheaths with horizontal ridges at the top opposite the base of the blade *C. neurophora*
- 6b. Leaf sheaths not cross-corrugate at the top 7

- 7a. Beak of perigynia deeply cut into 2 pointed teeth at the tip; leaf sheaths mottled green and white *C. grvida*
- 7b. Beak of perigynia little or not cut at the tip; leaf sheaths not mottled 8

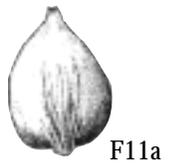


- 8a. Lower spikes well separated *C. prairea*
- 8b. Lower spikes touching each other *C. diandra*

- 9a. Inflorescence 5-15 mm long; stems creeping on wet peat *C. chordorrhiza*
- 9b. Inflorescence >15 cm long; stems erect; habitat various 10



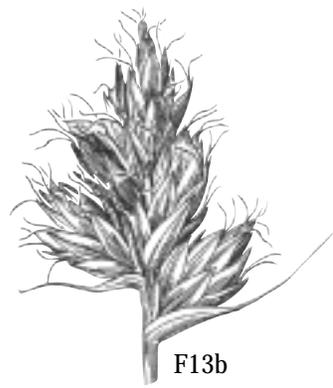
- 10a. Leaf sheaths green and white opposite where the blade meets the stem *C. sartwellii*
- 10b. Upper leaf sheaths white or brown not green and white striped 11



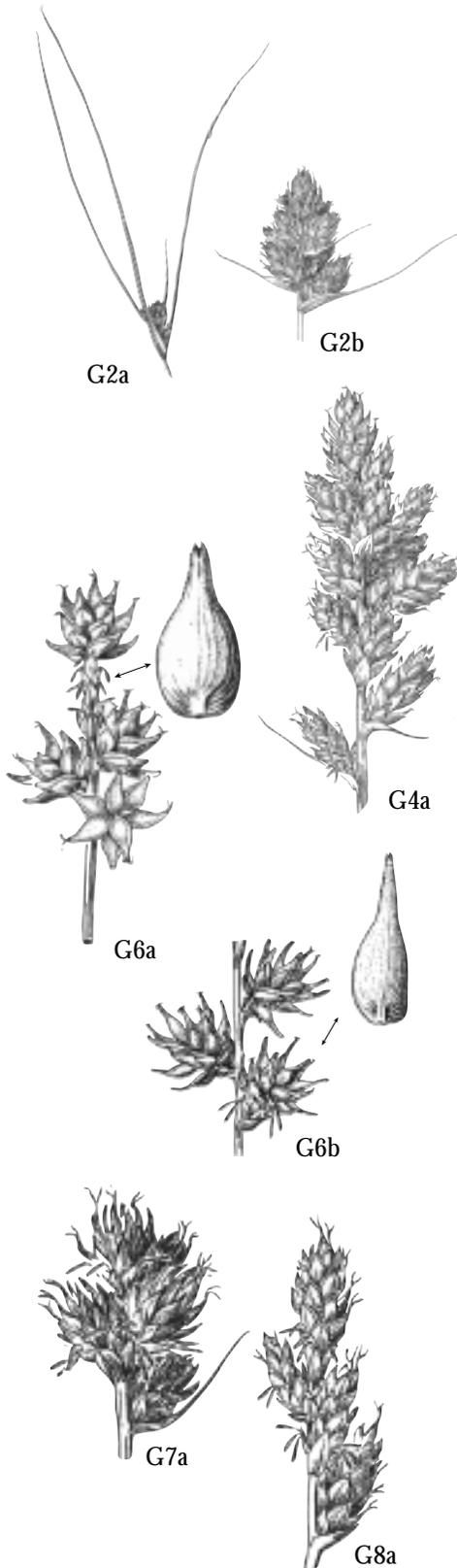
- 11a. Perigynia about 2 mm long; plants of fens *C. simulata*
- 11b. Perigynia >3 mm long; grasslands to wet meadows 12

- 12a. Perigynia 4-6 mm long *C. siccata*
- 12b. Perigynia 3-4 mm long 13

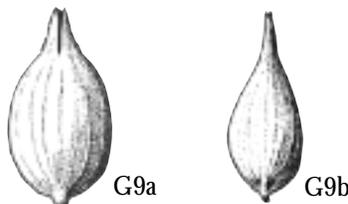
- 13a. Stem mostly >20 cm high, sharply 3-angled and roughened near the top *C. praegracilis*
- 13b. Stem usually <20 cm high, rounded and smooth *C. douglasii*



Group G Achene 2-sided; bisexual spikes with males at the base

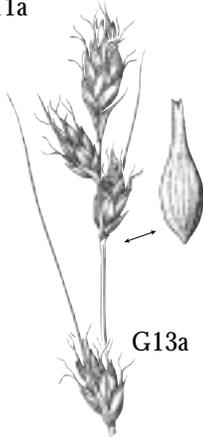


- 1a. Leaf-like bract at the base of the inflorescence longer than the inflorescence 2
- 1b. Bracts not surpassing the inflorescence 3
- 2a. Perigynium beak 3-4 mm long *C. sychnocephala*
- 2b. Beaks of perigynia ≤ 1 mm long *C. athrostachya*
- 3a. Perigynia 2-3 mm long including the beak 4
- 3b. Perigynia > 3 mm long 10
- 4a. Spikes 7-14, crowded in an elongate cluster *C. arcta*
- 4b. Spikes fewer or well-separated 5
- 5a. Perigynia widely spreading at maturity so the spikes appear star-like when viewed from above 6
- 5b. Perigynia erect or ascending 7
- 6a. Beak of perigynia < 1 mm long, up to half as long as the body *C. interior*
- 6b. Beak of perigynia > 1 mm long, $>$ half as long as the body *C. echinata*
- 7a. Beaks of perigynia ≥ 1 mm *C. limnophila*
- 7b. Perigynium beaks < 1 mm long 8
- 8a. Most spikes with > 10 perigynia *C. canescens*
- 8b. Most spikes with 5-10 perigynia 9
- 9a. Perigynium beaks ≤ 0.5 mm long *C. brunnescens*
- 9b. Beaks of perigynia 0.5-1.0 mm long *C. laeviculmis*





G11a



G13a



G13b



G14a



G17a



G17b



G18a

- 10a. Perigynia with rounded margins, filled to the edges with the seed 11
- 10b. Perigynia thin-edged, not completely filled by the seed inside 14

- 11a. Perigynia widely spreading at maturity so the spikes appear star-like when viewed from above *C. echinata*
- 11b. Perigynia erect or ascending 12

- 12a. Beak of perigynium <0.5 mm long; spikes closely aggregated *C. tenuiflora*
- 12b. Perigynium beak >0.5 mm; spike widely spaced 13

- 13a. Beak of perigynium ≥ 1 mm long, nearly as long as the body *C. deweyana*
- 13b. Perigynium beak <1 mm long *C. laeviculmis*

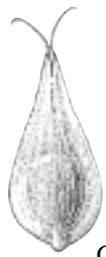
- 14a. Spikes tightly clustered in a globose head 7-12 mm high *C. limnophila*
- 14b. Inflorescence >12 mm long 15

- 15a. Perigynia 3-4 mm long including the beak 16
- 15b. Perigynia >4 mm long 21

- 16a. Perigynia >3 times as long as wide 17
- 16b. Perigynia 1-3 times as long as wide 18

- 17a. Spikes in an orbicular to ovoid cluster, 1-2 times as long as wide *C. microptera*
- 17b. Inflorescence in an oblong cluster 2-3 times as long as wide *C. crawfordii*

- 18a. Perigynia >25 mm wide *C. brevior*
- 18b. Perigynia <25 mm wide 19



G19a



G20a, 22b



G20b



G22a, 24b



G23a



G24a

- 19a. Perigynia averaging 3.0-3.5 mm long *C. bebbii*
 19b. Perigynia averaging ≥ 3.5 mm long 20
- 20a. Inflorescence globose; spikes tightly clustered *C. microptera* or *C. pachystachya*
 20b. Lower spikes well separated and distinct from those above *C. tenera* or *C. tincta*
- 21a. Spikes in an orbicular to ovoid cluster, 1-2 times as long as wide 22
 21b. Inflorescence >2 times as long as wide 23
- 22a. Female scales light brown; rare *C. scoparia*
 22b. Female scales dark brown; common *C. microptera* or *C. pachystachya*
- 23a. Perigynia >2.5 mm wide *C. brevior*
 23b. Perigynia ≤ 2.5 mm wide 24
- 24a. Female scales about as long as the tips of perigynia *C. praticola*
 24b. Perigynia beaks conspicuously exceeding the female scales *C. scoparia*

Key to the Montana Species of *Juncus*

Juncus albescens, *J. biglumis* and *J. triglumis* occur only in high subalpine to alpine habitats and are not included. *Juncus vaseyi* is reported for Montana, but we have been unable to find specimens to verify this report.

- 1a. Plants fibrous-rooted annual with flowers in the axils of leaves as well as in terminal clusters *J. bufonius*
- 1b. Plants perennial without flowers in leaf axils 2
- 2a. Stem leaf blades lacking or reduced to papery sheaths 3
- 2b. Stem leaves present and conspicuous 6
- 3a. Stems with 1-4 flowers *J. drummondii*
- 3b. Stems with >4 flowers 4
- 4a. Stems densely clustered from short rhizomes *J. effusus*
- 4b. Plants with spreading rhizomes 5
- 5a. Inflorescence apparently attached near middle of stem (stem-like portion above inflorescence is actually considered a bract) *J. filiformis*
- 5b. Inflorescence apparently attached on upper third of the stem *J. balticus*
- 6a. Leaves iris-like, each folded in half and enfolding those above at the base (equitant) 7
- 6b. Leaves not equitant 8
- 7a. Seeds nearly 1 mm long with a distinct tail at each end (use hand lens) *J. tracyi*
- 7b. Seeds ca. 0.5 mm long with a short nipple at each end but lacking tails *J. ensifolius*



1a



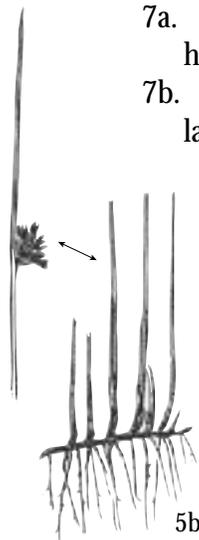
3a



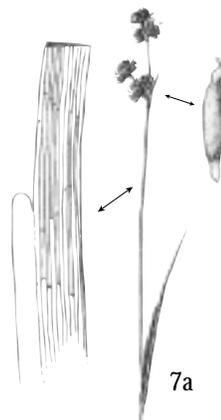
4a



5a



5b



7a



7b

8a. Leaf blades round in cross-section and usually divided cross-wise into sections (hold up to light) 9
 8b. Leaf blades flat or v-shaped in cross-section 17

9a. Stems with a single head-like cluster of flowers; high montane to alpine *J. mertensianus*
 9b. Most stems with >1 head; habitat usually lower 10

10a. Flowers in clusters of 3-12 flowers 11
 10b. Most flower heads with >12 flowers each 14

11a. Petal-like tepals mostly >3 mm long 12
 11b. Tepals 2-3 mm long 13

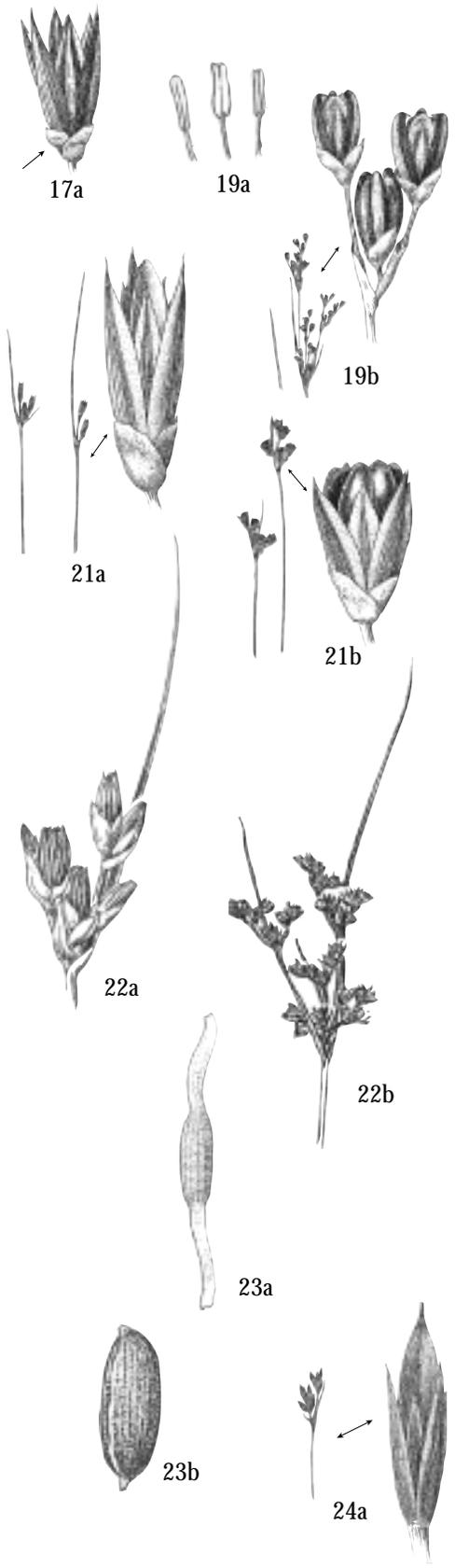
12a. Tepals shorter than the mature capsule; seeds with short white "tails" on each end (rare) *J. tweedyi*
 12b. Tepals as long or longer than the mature capsule; seeds without tails *J. nevadensis*

13a. Seed capsule pointed at the top *J. articulatus*
 13b. Seed capsule distinctly rounded on top *J. alpinus*

14a. Heads, 10-15 mm wide, with 30-80 flowers each ... *J. torreyi*
 14b. Heads smaller with fewer flowers 15

15a. Stems clumped; stamens 3 in some flowers (rare) *J. acuminatus*
 15b. Stems arising singly from rhizomes; stamens 6 16

16a. Seed capsules rounded to the small pointed tip; anthers as long or longer than anther stalks; rhizome without swollen nodes *J. nevadensis*
 16b. Seed capsules tapered to a long point; anthers shorter than anther stalks; rhizome nodes swollen *J. nodosus*



17a. Each flower with a pair of small bracts at the base (prophyll) in addition to a single bract at the base of the flower stalk... 18
 17b. Each flower with only a single prophyll or prophylls lacking 23

18a. Tips of outer perianth segments (tepals) curved inward (hooded) 19
 18b. Outer tepals not hooded 20

19a. Anthers as long as their stalks; seed capsules longer than the tepals *J. compressus*
 19b. Anthers ca. 3 times as long as their stalks; seed capsules ca. as long as the tepals *J. gerardii*

20a. Flowers 2-7 per stem 21
 20b. Flowers usually >7 per stem 22

21a. Tepals 6-7 mm long; flowers 1-3 per stem *J. parryi*
 21b. Tepals 4-5 mm long; flowers usually 2-7 per stem *J. hallii*

22a. Seed capsule with 3 cells in cross section; plants of mountains and intermontane valleys *J. confusus*
 22b. Capsule with only 1 chamber in cross section; plants of the Great Plains *J. tenuis* or *J. interior*

23a. Seeds with white "tails" as long as the body 24
 23b. Seeds without tails 25

24a. Petal-like tepals uniformly brown, shorter than the mature capsule *J. castaneus*
 24b. Tepals with a broad green mid-stripe, longer than the mature capsule *J. regelii*

25a. Petal-like tepals 3-4 mm long, shorter than the mature capsule *J. covillei*
 25b. Petal-like tepals 5-6 mm long, longer than the mature capsule *J. longistylis*

Glossary

- > Greater than, more than
- ≥ Greater than or equal to, more than or as many as
- < Less than, fewer than
- ≤ Less than or equal to, fewer than or as many as

Achene • Dry, 1-seeded fruit with a hard coat; achenes often resemble seeds.

Alpine • Above the altitudinal limit of trees.

Alternate • Arranged 1-per-node; see “opposite” and “whorl.”

Anther • The sac at the end of the stamen that contains the pollen.

Annual • A plant that completes its life-cycle in 1 year or less.

Aster-like • Flowers in a hemispheric head with tubular flowers (usually yellow) in the circular center and petal-shaped flowers surrounding it.

Auricle • A small lobe partly surrounding the stem at the base of a grass leaf blade.

Awn • A stiff bristle-like appendage.

Axil • Juncture between a leaf and stem or any two organs.

Beak • A firm, elongate structure, tip or projection.

Biennial • A plant that is vegetative its first year, then flowers and dies the second; sometimes such plants may live more than 2 years, but flowering is always followed by death.

Bladder • Inflated, thin-walled, sac-like structure.

Blade • The usually broad and flat portion of the leaf; does not include the stalk-like petiole, if one exists.

Bract • Reduced or modified leaf subtending a flower or group of flowers.

Bulb • Underground bud covered by fleshy scales, like an onion.

Calyx • The collective sepals; the outermost, usually green series of flower parts.

Capsule • A dry, many-seeded fruit.

Catkin • A small, tightly clustered spike of unisexual flowers with bracts but lacking petals and sepals.

Collar • Top of a grass leaf sheath where it joins the blade.

Cone • A usually cylindrical reproductive structure consisting of a central axis with spirally arranged scales, each subtending seed- or pollen-bearing structures; occurring in non-flowering plants.

Dandelion-like • Flowers all strap-shaped and clustered in a conical head.

Glossary

- Dicot** • A plant whose germinated seedlings have 2 leaf-like cotyledons before the first true leaves are formed; true leaves have net-like venation; flower parts usually in 2s or 4s or 5s.
- Equitant** • Each leaf folded in half lengthwise and partly enfolding the base of the one above; like an iris.
- Fen** • Vegetation dominated by grass-like plants with wet, peaty soil.
- Floret** • The flower of a grass composed of the lemma, palea and enclosed male and female parts.
- Fron**d • A fern leaf.
- Gland** • An organ usually recognized by its secretion of tiny oil, resin etc. droplets, often at the ends of hairs.
- Glume** • One of two scale-like bracts at the base of a grass spikelet.
- Inflorescence** • Flowering portion of the plant.
- Leaf sheath** • A tubular covering; in grasses the leaf sheath occurs below the blade and surrounds and encloses the stem.
- Leaflet** • A separate, leaf-like segment of a compound leaf. Leaves are attached to stems that have a bud at the tip; leaflets are attached to the axis (rachis) of a compound leaf, which has a leaflet or coiled tendril at the tip instead of a bud.
- Lemma** • The outermost of the pair of scale-like grass flower parts surrounding the ovary and/or stamens.
- Ligule** • A short, hairy or membranous projection on the inside of the leaf sheath at the point where it joins the blade.
- Lobe** • Rounded or pointed segment of a leaf, petal or fruit that projects or stands out from the margin.
- Mineral soil** • Soil composed mainly of eroded rock, clay or sand and only a small fraction of organic matter.
- Monocot** • A plant whose germinated seedlings have a single leaf-like cotyledon before the first true leaves are formed; leaves undivided with parallel veins; flower parts usually in 3s or 6s.
- Montane** • Referring to the vegetation zone encompassing the foothills and lower mountains.
- Node** • A stem “joint,” the point of attachment for leaves or side branches.
- Opposite** • Paired at the nodes; plants with opposite leaves have 2 leaves arising opposite each other at a single leaf node.
- Palmate** • Leaflets arranged with their stalks all attached at a single point on the tip of the petiole, like fingers to the palm of a hand.
- Pappus** • In the Asteraceae; the outer series of flower parts (calyx), usually composed of several to many bristles or scales.
- Peat** • Soil composed primarily of decomposing organic matter (i.e., leaves, stems etc.).
- Peatland** • Wetland with organic soil; i.e., derived from decayed plants.

- Perennial** • A plant that persists through at least one winter and flowers in at least two growing seasons.
- Perianth** • A collective term for the sepals (calyx) and petals (corolla) together; often used when they are difficult to distinguish.
- Perigynium** • In the genus *Carex*; the sac-like flower part surrounding the seed (achene).
- Petal** • One member of the series of flower parts just inside the sepals, often colored and showy.
- Petiole** • The stalk of a leaf, attaching the leaf blade to the stem.
- Pinnate** • With leaflets, lobes or veins arising along opposite sides of a long axis.
- Rhizome** • An underground, often horizontal stem that may give rise to many individual-appearing plants.
- Rosette** • A cluster of leaves all radiating out from a central point of attachment.
- Scale** • A small, thin structure, like a fish scale.
- Spathe** • Large, hood-like bract partially enclosing the inflorescence.
- Spike** • An elongate inflorescence bearing unstalked flowers.
- Spikelet** • A small spike of flowers in the grass or sedge families.
- Spore** • A simple 1-celled reproductive body, capable of giving rise to a new individual.
- Spur** • A long, narrow appendage, often from a petal or sepal.
- Stipule** • Scale- or leaf-like appendages at the base of the leaf where it joins the stem.
- Subalpine** • Referring to the vegetation zone of the higher mountains but still within the growing limits of trees.
- Subtend** • To be immediately beneath.
- Succulent** • Thick, fleshy and often juicy.
- Tepal** • A petal or sepal when they are indistinguishable from each other.
- Terminal** • Referring to the last or end segment or structure.
- Toothed** • With short, pointed or rounded projections along the edge of a leaf or other structure.
- Umbel** • An inflorescence with the flower stalks ascending from the same point at the tip of a stem or branch, like the spokes of an umbrella.
- Vine** • A plant with weak stems that “climbs” and is supported by other plants or upright objects.
- Whorl** • A group of 3 or more leaves or branches all attached at the same level (node) on the stem.
- Tussock** • A distinct tuft or hummock formed by a grass or sedge in which all stems arise from a well-defined central area.

Appendix A

Wetland vascular plant species occurring in Montana, including all species listed in Dorn's Vascular Plants of Montana (1984) in OBL, FACW+, FACW, FACW-, FAC+ or FAC indicator categories in either Region 4 or Region 9 according to U. S. Fish and Wildlife Service. An asterisk (*) denotes an introduced species.

Scientific name	Common name	Family	Reg. 9	Reg. 4
<i>Acer glabrum</i> Torr.	Rocky Mtn. maple	Aceraceae	FAC	FAC
<i>Acer negundo</i> L.	Box-elder	Aceraceae	FAC+	FAC
<i>Aconitum columbianum</i> Nutt.	Columbia monkshood	Ranunculaceae	FACW	FACW
<i>Acorus calamus</i> L.	Sweetflag	Araceae	OBL	OBL
<i>Adiantum pedatum</i> L.	Northern maidenhair	Polypodiaceae	FAC	FAC
<i>Adoxa moschatellina</i> L.	Musk-root	Adoxaceae	FAC-	FAC
<i>Agoseris aurantiaca</i> (Hook.) Greene	False dandelion	Asteraceae	FAC	—
<i>Agoseris glauca</i> (Pursh) D. Dietr.	False dandelion	Asteraceae	FAC	FAC
<i>Agropyron caninum</i> Beauv.	Cutting wheatgrass	Poaceae	FAC-	FAC
<i>Agropyron trachycalum</i> (Link) Lewis	Slender wheatgrass	Poaceae	FAC	FAC
* <i>Agropyron repens</i> (L.) Beauv.	Quackgrass	Poaceae	FACU	FAC
* <i>Agrostis alba</i> L.	Redtop	Poaceae	FACW	FACW
<i>Agrostis exarata</i> Trin.	Spike bentgrass	Poaceae	FACW	FACW
<i>Agrostis hyemalis</i> (Walter) B.S.P.	Winter bentgrass	Poaceae	FAC	—
<i>Agrostis oregonensis</i> Vasey	Oregon bentgrass	Poaceae	FAC	—
<i>Agrostis scabra</i> Willd.	Rough bentgrass	Poaceae	FAC	FAC
<i>Agrostis stolonifera</i>	Spreading bentgrass	Poaceae	FAC+	FAC+
<i>Alisma gramineum</i> Gmel.	Narrow-leaf water-plantain	Alismataceae	OBL	OBL
<i>Alisma plantago-aquatica</i> L.	Broad-leaf water-plantain	Alismataceae	OBL	OBL
<i>Allium douglasii</i> Hook.	Douglas' onion	Liliaceae	FAC+	—
<i>Allium schoenoprasum</i> L.	Chives	Liliaceae	FACW	—
<i>Alnus incana</i> (L.) Moench	Speckled alder	Betulaceae	FACW	FACW
<i>Alnus sinuata</i> (Reg.) Rybd	Sitka alder	Betulaceae	FACW	—
<i>Alopecurus aequalis</i> Sobol.	Short-awn foxtail	Poaceae	OBL	OBL
<i>Alopecurus alpinus</i> J.E. Smith	Mountain foxtail	Poaceae	FACW	—
<i>Alopecurus carolinianus</i> Walter	Tufted foxtail	Poaceae	FAC+	FACW
<i>Alopecurus geniculatus</i> L.	Meadow foxtail	Poaceae	FACW+	OBL
* <i>Alopecurus pratensis</i> L.	Meadow foxtail	Poaceae	FACW	FACW
<i>Amaranthus blitoides</i> S. Wats.	Prostrate amaranth	Amaranthaceae	FACW	FAC
<i>Amaranthus californicus</i> (Moq.) Wats.	California amaranth	Amaranthaceae	FACW	—
<i>Amerorchis rotundifolia</i> (Pursh) Hulten	Round-leaf orchis	Orchidaceae	OBL	—
<i>Ambrosia psilostachya</i> DC.	Naked-spike ragweed	Asteraceae	FACU+	FAC
<i>Ambrosia trifida</i> L.	Great ragweed	Asteraceae	FAC	FAC
<i>Ammannia coccinea</i> Rottb.	Purple ammannia	Lythraceae	OBL	OBL
<i>Anagallis arvensis</i> L.	Scarlet pimpernel	Primulaceae	FAC	NI
<i>Androsace filiformis</i> Retz.	Slender rock-jasmine	Primulaceae	FACW	—
<i>Anemone canadensis</i> L.	Canada thimble-weed	Ranunculaceae	—	FACW
<i>Anemone parviflora</i> Michx.	Small-flower anemone	Ranunculaceae	FACW	—
<i>Angelica arguta</i> Nutt.	Lyall's angelica	Apiaceae	FACW	—
<i>Angelica dawsonii</i> S. Wats.	Dawson's angelica	Apiaceae	FACW	—
<i>Angelica pinnata</i> S. Wats.	Small-leaf angelica	Apiaceae	FACW	—
<i>Apocynum cannabinum</i> L.	Clasping-leaf dogbane	Apocynaceae	FAC	FAC
<i>Apocynum sibiricum</i> Jacq.	Prairie dogbane	Apocynaceae	FAC-	FAC
<i>Aquilegia coerulea</i> James	Colorado columbine	Ranunculaceae	FAC	—
<i>Aquilegia formosa</i> Fisch.	Crimson columbine	Ranunculaceae	FAC	—
* <i>Arenaria serpyllifolia</i> L.	Thyme-leaf sandwort	Caryophyllaceae	FACU	FAC

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Scientific name	Common name	Family	Reg. 9	Reg. 4
<i>Arnica amplexicaulis</i> Nutt	Streambank arnica	Asteraceae	FACW	—
<i>Arnica chamissonis</i> Less.	Leafy arnica	Asteraceae	FACW	—
<i>Arnica diversifolia</i> Greene	Sticky-leaf arnica	Asteraceae	FACW	—
<i>Arnica longifolia</i> D.C. Eat.	Seep spring arnica	Asteraceae	FACW	—
<i>Artemisia biennis</i> Willd.	Biennial wormwood	Asteraceae	FACW	FAC
<i>Artemisia lindleyana</i> Besser	Columbia River wormwood	Asteraceae	OBL	—
<i>Artemisia ludoviciana</i> Nutt.	White sagebrush	Asteraceae	FACU	—
<i>Asclepias incarnata</i> L.	Swamp milkweed	Asclepiadaceae	—	OBL
<i>Asclepias speciosa</i> Torr.	Showy milkweed	Asclepiadaceae	FAC+	FAC
<i>Aster brachyactis</i> Blake	Rayless alkali aster	Asteraceae	FACW	FACW
<i>Aster chilensis</i> Nees	Common California aster	Asteraceae	FAC	NI
<i>Aster eatonii</i> (Gray) Howell	Eaton aster	Asteraceae	FAC	NI
<i>Aster foliaceus</i> Lindl.	Leafy-bracted aster	Asteraceae	FACW	—
<i>Aster frondosus</i> (Nutt.) T. & Gray	Leafy aster	Asteraceae	FACW	—
<i>Aster hesperius</i> Gray	Siskiyou aster	Asteraceae	OBL	OBL
<i>Aster junciformis</i> Rydb.	Rush aster	Asteraceae	OBL	OBL
<i>Aster modestus</i> Lindl.	Great northern aster	Asteraceae	FAC	—
<i>Aster occidentalis</i> (Nutt.) T. & G.	Western mountain aster	Asteraceae	FAC	—
<i>Aster pansus</i> (Blake) Cronq.	Many-flowered aster	Asteraceae	FAC	FAC
<i>Astragalus americanus</i> (Hook.) Jones	American milkvetch	Fabaceae	FAC	FAC
<i>Astragalus canadensis</i> L.	Canada milkvetch	Fabaceae	FACW-	FACU
<i>Athyrium filix-femina</i> (L.) Roth	Subarctic lady fern	Polypodiaceae	FAC	FAC
* <i>Atriplex hortensis</i> L.	Garden orache	Chenopodiaceae	FAC	FAC
<i>Atriplex patula</i> L.	Halberd-leaf saltbush	Chenopodium	FACW	FACW
<i>Atriplex truncata</i> (Wats.) Gray	Wedge-leaf orache	Chenopodiaceae	FACU+	—
<i>Bacopa rotundifolia</i> (Michx.) Wettst.	Disk water-hyssop	Scrophulariaceae	OBL	OBL
<i>Barbarea orthoceras</i> Ledeb.	American winter cress	Brassicaceae	FACW+	OBL
* <i>Barbarea vulgaris</i> R.Br.	Yellow rocket	Brassicaceae	FAC-	FAC
* <i>Bassia hyssopifolia</i> (Pallas) Kuntze	Five-horn smother-weed	Chenopodiaceae	FACW	FACW
<i>Beckmannia syzigachne</i> (Steud.) Fern.	American sloughgrass	Poaceae	OBL	OBL
<i>Berula erecta</i> (Huds.) Cov.	Cut-leaf water parsnip	Apiaceae	OBL	OBL
<i>Betula glandulosa</i> Michx.	Dwarf tundra birch	Betulaceae	OBL	OBL
<i>Betula occidentalis</i> Hook.	Spring birch	Betulaceae	FACW	FACW
<i>Bidens cernua</i> L.	Nodding beggar's-ticks	Asteraceae	FACW+	OBL
<i>Bidens comosa</i> (Gray) Wieg.	Leafy-bract beggar's-ticks	Asteraceae	FACW	FACW
<i>Bidens frondosa</i> L.	Devil's beggar's-ticks	Asteraceae	FACW+	FACW
<i>Bidens tripartita</i> L.	Three-lobe beggar's-ticks	Asteraceae	FACW	NI
<i>Boisduvalia densiflora</i> (Lindl.) Wats.	Dense-flower spike-primrose	Onagraceae	FACW-	—
<i>Boisduvalia glabella</i> (Nutt.) Walp.	Smooth spike-primrose	Onagraceae	FACW+	FACW
<i>Botrychium boreale</i> Milde	Northern grapefern	Ophioglossaceae	FAC	—
<i>Botrychium lanceolatum</i> (Gmel.) Rupr.	Triangle moonwort	Ophioglossaceae	FACW	—
<i>Botrychium lunaria</i> (L.) Swartz	Moonwort	Ophioglossaceae	FAC	FAC
<i>Botrychium multifidum</i> (Gmel.) Rupr.	Leathery grapefern	Ophioglossaceae	FAC	FAC
<i>Botrychium simplex</i> Hitchc.	Least grapefern	Ophioglossaceae	FACU	FAC
<i>Boykinia major</i> Gray	Mountain brookfoam	Saxifragaceae	FACW	—
<i>Brasenia schreberi</i> Gmel.	Watershield	Nymphaeaceae	OBL	OBL
<i>Bromus ciliatus</i> L.	Fringed brome	Poaceae	FAC+	FAC
<i>Butomus umbellatus</i> L.	Flowering-rush	Butomaceae	OBL	OBL
<i>Calamagrostis canadensis</i> (Michx.) Beauv.	Blue-joint reedgrass	Poaceae	FACW+	FACW+
<i>Calamagrostis inexpansa</i> Gray	Narrow-spike small reedgrass	Poaceae	FACW	FACW
<i>Calamagrostis neglecta</i> (Ehrh.) G.M. & S.	Slimstem reedgrass	Poaceae	FACW	OBL
<i>Callitriche hermaphroditica</i> L.	Autumnal water-starwort	Callitrichaceae	OBL	OBL
<i>Callitriche heterophylla</i> Pursh	Larger water-starwort	Callitrichaceae	OBL	OBL
<i>Callitriche stagnalis</i> Scop.	Pond water-starwort	Callitrichaceae	OBL	—

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Scientific name	Common name	Family	Reg. 9	Reg. 4
<i>Callitriche verna</i> L.	Spiny water-starwort	Callitricaceae	—	OBL
<i>Caltha leptosepala</i> DC.	Slender-sepal marsh marigold	Ranunculaceae	OBL	—
<i>Calypso bulbosa</i> (L.) Oakes	Fairy slipper	Orchidaceae	FAC+	FACW
<i>Camassia quamash</i> (Pursh) Greene	Common camas	Liliaceae	FACW	—
<i>Camissonia subacaulis</i> (Pursh) Raven	Long-leaf suncup	Onagraceae	FACW	—
<i>Campanula parryi</i> Gray	Parry northern bellflower	Campanulaceae	FAC	—
<i>Campanula rotundifolia</i> L.	Scotch bellflower	Campanulaceae	FACU+	FAC
<i>Campanula uniflora</i> L.	Arctic bellflower	Campanulaceae	FAC	—
<i>Cardamine breweri</i> Wats.	Brewer's bittercress	Brassicaceae	FACW+	—
<i>Cardamine oligosperma</i> Nutt.	Few-seed bittercress	Brassicaceae	FACW	—
<i>Cardamine pensylvanica</i> Willd.	Pennsylvania bittercress	Brassicaceae	FACW	OBL
<i>Carex amplifolia</i> Boott	Big-leaf sedge	Cyperaceae	FACW+	—
<i>Carex aperta</i> Boott	Columbia sedge	Cyperaceae	FACW	—
<i>Carex aquatilis</i> Wahl.	Water sedge	Cyperaceae	OBL	OBL
<i>Carex arcta</i> Boott	Northern clustered sedge	Cyperaceae	FACW+	—
<i>Carex atherodes</i> Spreng.	Slough sedge	Cyperaceae	OBL	OBL
<i>Carex athrostachya</i> Olney	Slender-beak sedge	Cyperaceae	FACW	FACW
<i>Carex atrata</i> L.	Black-scale sedge	Cyperaceae	FAC	—
<i>Carex aurea</i> Nutt.	Golden-fruit sedge	Cyperaceae	FACW+	FACW
<i>Carex bebbii</i> (Bailey) Fern.	Bebb's sedge	Cyperaceae	OBL	OBL
<i>Carex bipartita</i> All.	Arctic haare's-foot sedge	Cyperaceae	OBL	—
<i>Carex brevior</i> (Dewey) Lunell	Short-beak sedge	Cyperaceae	OBL	—
<i>Carex brunnescens</i> (Pers.) Poir.	Brownish sedge	Cyperaceae	OBL	FAC
<i>Carex buxbaumii</i> Wahl.	Brown bog sedge	Cyperaceae	OBL	—
<i>Carex canescens</i> L.	Hoary sedge	Cyperaceae	FACW+	OBL
<i>Carex capillaris</i> L.	Hair-like sedge	Cyperaceae	FACW	FACW
<i>Carex capitata</i> L.	Capitate sedge	Cyperaceae	FAC	—
<i>Carex chordorrhiza</i> Lightf.	Rope-root sedge	Cyperaceae	—	—
<i>Carex comosa</i> Boott	Bearded sedge	Cyperaceae	OBL	OBL
<i>Carex crawei</i> Dewey	Crawe's sedge	Cyperaceae	FACW	FACW
<i>Carex cusickii</i> Piper & Beattie	Cusick's sedge	Cyperaceae	OBL	—
<i>Carex deweyana</i> Schweinitz	Short-scale sedge	Cyperaceae	FAC+	—
<i>Carex diandra</i> Schrank	Lesser paniced sedge	Cyperaceae	OBL	OBL
<i>Carex disperma</i> Dewey	Soft-leaf sedge	Cyperaceae	FACW	FACW
<i>Carex echinata</i> Murray	Little prickly sedge	Cyperaceae	NI	—
<i>Carex eurycarpa</i> Holm	Wide-fruit sedge	Cyperaceae	FACW+	—
<i>Carex exsuccata</i> Bailey	Beaked sedge	Cyperaceae	OBL	—
<i>Carex flava</i> L.	Yellow sedge	Cyperaceae	OBL	—
<i>Carex gynocrates</i> Drejer	Northern bog sedge	Cyperaceae	OBL	OBL
<i>Carex heteroneura</i> Boott	Different-nerved sedge	Cyperaceae	FAC	—
<i>Carex hystericina</i> Willd.	Porcupine sedge	Cyperaceae	OBL	OBL
<i>Carex idaho</i> Bailey	Idaho sedge	Cyperaceae	FACW	—
<i>Carex illota</i> Bailey	Small-head sedge	Cyperaceae	FAC	—
<i>Carex interior</i> Bailey	Inland sedge	Cyperaceae	FACW	OBL
<i>Carex kelloggii</i> Boott	Kellogg's sedge	Cyperaceae	FACW+	—
<i>Carex lacustris</i> Willd.	Lakebank sedge	Cyperaceae	—	OBL
<i>Carex laeviconica</i> Dewey	Smooth-cone sedge	Cyperaceae	OBL	OBL
<i>Carex laeviculmis</i> Meinsh.	Smooth-stem sedge	Cyperaceae	FACW	—
<i>Carex lanuginosa</i> Michx.	Wooly sedge	Cyperaceae	OBL	OBL
<i>Carex lasiocarpa</i> Ehrh.	Wooly-fruit sedge	Cyperaceae	OBL	OBL
<i>Carex lenticularis</i> Michx.	Shore sedge	Cyperaceae	FACW+	—
<i>Carex leporina</i> L.	Hare's-foot sedge	Cyperaceae	FAC	—
<i>Carex leptalea</i> Wahl.	Bristly-stalk sedge	Cyperaceae	OBL	OBL
<i>Carex limnophila</i> Hermann	Appressed sedge	Cyperaceae	FACW	—

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Scientific name	Common name	Family	Reg. 9	Reg. 4
<i>Carex limosa</i> L.	Mud sedge	Cyperaceae	OBL	---
<i>Carex livida</i> (Wahl.) Willd.	Livid sedge	Cyperaceae	OBL	---
<i>Carex luzulina</i> Olney	Wood-rush sedge	Cyperaceae	OBL	---
<i>Carex media</i> R.Br.	Intermediate sedge	Cyperaceae	FACW	---
<i>Carex mertensii</i> Prescott	Mertens's sedge	Cyperaceae	FACW	---
<i>Carex microptera</i> Mack.	Small-wing sedge	Cyperaceae	FAC	FAC
<i>Carex nebrascensis</i> Dewey	Nebraska sedge	Cyperaceae	OBL	OBL
<i>Carex nelsonii</i> Mack.	Nelson's sedge	Cyperaceae	FAC	---
<i>Carex neurophora</i> Mack.	Alpine-nerve sedge	Cyperaceae	FACW	---
<i>Carex nigricans</i> C.A. Meyer	Black alpine sedge	Cyperaceae	FACW	---
<i>Carex norvegica</i> Retz.	Scandinavian sedge	Cyperaceae	FACW	---
<i>Carex nova</i> Bailey	New sedge	Cyperaceae	FACW-	---
<i>Carex pachystachya</i> Steud.	Thick-head sedge	Cyperaceae	FAC	---
<i>Carex parryana</i> Dewey	Parry's sedge	Cyperaceae	FAC+	FACW
<i>Carex paupercula</i> Michx.	Poor sedge	Cyperaceae	OBL	---
<i>Carex pelocarpa</i> Herm.	Dusky-seed sedge	Cyperaceae	FAC	---
<i>Carex podocarpa</i> Clarke	Short-stalk sedge	Cyperaceae	FAC	---
<i>Carex praeceptorum</i> Mack.	Early sedge	Cyperaceae	FACW+	---
<i>Carex praegracilis</i> Boott	Clustered field sedge	Cyperaceae	FACW	FACW
<i>Carex prairea</i> Dewey	Prairie sedge	Cyperaceae	OBL	OBL
<i>Carex praticola</i> Rydb.	Northern meadow sedge	Cyperaceae	FACW	FAC+
<i>Carex prionophylla</i> Holm	Saw-leaf sedge	Cyperaceae	FACW	---
<i>Carex pyrenaica</i> Wahl.	Pyrenaean sedge	Cyperaceae	FAC	---
<i>Carex retrorsa</i> Schw.	Retrose sedge	Cyperaceae	FAC	OBL
<i>Carex rostrata</i> Stokes	Beaked sedge	Cyperaceae	OBL	OBL
<i>Carex sartwellii</i> Dewey	Sartwell's sedge	Cyperaceae	FACW+	FACW
<i>Carex saxatilis</i> L.	Russet sedge	Cyperaceae	FACW+	---
<i>Carex scoparia</i> Willd.	Pointed broom sedge	Cyperaceae	FACW	FACW
<i>Carex scopulorum</i> Holm	Holm's Rocky Mountain sedge	Cyperaceae	FACW	---
<i>Carex simulata</i> Mack.	Short-beak sedge	Cyperaceae	OBL	OBL
<i>Carex spectabilis</i> Dewey	Showy sedge	Cyperaceae	FACW	---
<i>Carex sprengei</i> Spreng.	Long-beak sedge	Cyperaceae	FAC	---
<i>Carex sychnocephala</i> Carey	Many-head sedge	Cyperaceae	FACW	FACW
<i>Carex tenera</i> Dewey	Slender sedge	Cyperaceae	FACU+	FACW
<i>Carex tenuiflora</i> Wah.	Thin-flowered sedge	Cyperaceae	---	---
<i>Carex torreyi</i> Tuckerman	Torrey's sedge	Cyperaceae	FAC	---
<i>Carex vesicaria</i> L.	Inflated sedge	Cyperaceae	OBL	OBL
<i>Carex viridula</i> Michx.	Little green sedge	Cyperaceae	FACW+	OBL
<i>Carex vulpinoidea</i> Michx.	Fox sedge	Cyperaceae	OBL	OBL
<i>Carex stipata</i> Willd.	Stalk-grain sedge	Cyperaceae	OBL	OBL
<i>Carex tinctoria</i> Fern.	Tinged sedge	Cyperaceae	FAC	---
<i>Castilleja exilis</i> A. Nels.	Indian-paintbrush,	Scrophulariaceae	OBL	---
<i>Castilleja miniata</i> Hook.	Indian-paintbrush,scarlet	Scrophulariaceae	FAC	FAC
<i>Castilleja occidentalis</i> Torrey	Indian-paintbrush,western	Scrophulariaceae	FAC+	---
<i>Castilleja rhexifolia</i> Rydb.	Indian-paintbrush,rhexia-leaf	Scrophulariaceae	FAC	---
<i>Castilleja sulphurea</i> Rydb.	Indian-paintbrush,sulphur	Scrophulariaceae	FACW-	FAC
<i>Catabrosa aquatica</i> (L.) Beauv.	Brookgrass	Poaceae	OBL	OBL
<i>Centaurium exaltatum</i> (Griseb.) Piper	Centaury,tall	Gentianaceae	FACW	NI
<i>Centunculus minimus</i> L.	Chaffweed	Primulaceae	FACW	OBL
<i>Ceratophyllum demersum</i> L.	Hornwort,common	Ceratophyllaceae	OBL	OBL
* <i>Chenopodium album</i> L.	Goosefoot,white	Chenopodiaceae	FAC	FAC
<i>Chenopodium glaucum</i> L.	Goosefoot,oakleaf	Chenopodiaceae	FAC	FACW
<i>Chenopodium rubrum</i> L.	Goosefoot,coast-blite	Chenopodium	FACW+	OBL
<i>Chrysosplenium tetrandrum</i> Th.Fr.	Northern golden-saxifrage	Saxifragaceae	OBL	---

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Scientific name	Common name	Family	Reg. 9	Reg. 4
<i>Cicuta bulbifera</i> L.	Bulblet water-hemlock	Apiaceae	OBL	OBL
<i>Cicuta douglasii</i> (DC.) Coulter & Rose	Western water-hemlock	Apiaceae	OBL	---
<i>Cinna latifolia</i> (Trevir.) Griseb.	Slender wood-reedgrass	Poaceae	FACW	OBL
<i>Circaea alpina</i> L.	Small enchanter's nightshade	Onagraceae	FACW	FACW
<i>Cirsium undulatum</i>	Wavy-leaf thistle	Asteraceae	FACU+	FAC
<i>Claytonia perfoliata</i> Willd.	Miner's lettuce	Portulacaceae	FAC	FACW
<i>Claytonia sibirica</i> L.	Siberian springbeauty	Portulacaceae	FACW	---
<i>Coeloglossum viride</i> (L.) Hartm.	Long-bract green orchid	Orchidaceae	FAC	---
<i>Conioselinum scopulorum</i> (Gray) Coulter	Hemlock parsley	Apiaceae	FAC	---
<i>Conium maculatum</i> L.	Poison hemlock	Apiaceae	FACW-	FAC
<i>Corallorrhiza trifida</i> Chat.	Early coralroot	Orchidaceae	FAC	FAC
<i>Corallorrhiza wisterana</i> Conrad	Spring coralroot	Orchidaceae	FAC	---
<i>Coreopsis tinctoria</i> Nutt.	Golden tickseed	Asteraceae	FACU	FAC
<i>Cornus canadensis</i> L.	Canada bunchberry	Cornaceae	FAC-	FAC
<i>Cornus stolonifera</i> Michx.	Red osier dogwood	Cornaceae	FACW	FACW
<i>Crataegus douglasii</i> Lindl.	Douglas hawthorn	Rosaceae	FAC	---
<i>Crepis runcinata</i> (James) T. & G.	Dandelion hawkbeard	Asteraceae	FACU	FAC
<i>Cyperus acuminatus</i> Torr. & Hook.	Short-point flatsedge	Cyperaceae	OBL	OBL
<i>Cyperus aristatus</i> Rottb.	Awed flatsedge	Cyperaceae	OBL	OBL
<i>Cyperus erythrorhizos</i> Muhl.	Red-root flatsedge	Cyperaceae	OBL	OBL
<i>Cyperus rivularis</i> Kunth	Shining flatsedge	Cyperaceae	OBL	FACW
<i>Cyperus schweinitzii</i> Torr.	Schweinitz's flatsedge	Cyperaceae	FAC	FACU
<i>Cypripedium calceolus</i> L.	Small yellow lady's-slipper	Orchidaceae	FACW-	FACW
<i>Cypripedium fasciculatum</i> Wats.	Clustered lady's-slipper	Orchidaceae	FAC	---
<i>Cypripedium passerinum</i> Richards	Sparrow's-egg lady's-slipper	Orchidaceae	FACW	---
<i>Cystopteris montana</i> (Lam.) Desv.	Mountain bladder fern	Polypodiaceae	FAC	---
<i>Danthonia intermedia</i> Vasey	Vasey oatgrass	Poaceae	FACU+	FAC
<i>Delphinium depauperatum</i> Nutt.	Slim larkspur	Ranunculaceae	---	---
<i>Delphinium glaucum</i> Wats.	Tower larkspur	Ranunculaceae	FACW	---
<i>Deschampsia cespitosa</i> (L.) Beauv.	Tufted hairgrass	Poaceae	FACW	FACW
<i>Deschampsia danthonioides</i> (Trin.) Munro	Annual hairgrass	Poaceae	FACW-	---
<i>Deschampsia elongata</i> (Hook.) Munro	Slender hairgrass	Poaceae	FACW-	---
<i>Distichlis stricta</i> (Torr.) Rydb.	Inland saltgrass	Poaceae	FAC+	FACW
<i>Dodecatheon jeffreyi</i> Van Houte	Jeffrey's shooting-star	Primulaceae	FACW	---
<i>Dodecatheon pulchellum</i> (Raf.) Merrill	Few-flower shooting-star	Primulaceae	FACW	FACW-
<i>Downingia laeta</i> (Greene) Greene	Great Basin downingia	Campanulaceae	OBL	---
<i>Draba aurea</i> Hornem.	Golden whitlow-grass	Brassicaceae	---	FAC
<i>Drosera anglica</i> Huds.	English sundew	Droseraceae	OBL	---
<i>Drosera rotundifolia</i> L.	Round-leaf sundew	Droseraceae	OBL	OBL
<i>Dryopteris cristata</i> (L.) Gray	Crested shield-fern	Polypodiaceae	FACW	OBL
<i>Dulichium arundinaceum</i> (L.) Britton	Three-way sedge	Cyperaceae	OBL	---
* <i>Echinochloa crusgalli</i> (L.) Beauv.	Barnyard grass	Poaceae	FACW	FACW
<i>Echinocystis lobata</i> (Michx.) T. & G.	Wild mock-cucumber	Cucurbitaceae	---	FAC
* <i>Elaeagnus angustifolia</i> L.	Russian olive	Elaeagnaceae	FAC	FAC-
<i>Elatine californica</i> Gray	California water-wort	Elatinaceae	OBL	---
<i>Elatine triandra</i> Schkuhr.	Three-stamen water-wort	Elatinaceae	OBL	OBL
<i>Eleocharis acicularis</i> (L.) R. & S.	Least spikerush	Cyperaceae	OBL	OBL
<i>Eleocharis atropurpurea</i> (Retz.) Presl	Purple spikerush	Cyperaceae	FACW	---
<i>Eleocharis bella</i> (Poper) Svens.	Delicate spikerush	Cyperaceae	FACW	---
<i>Eleocharis flavescens</i> (Poir.) Urban	Pale spikerush	Cyperaceae	OBL	---
<i>Eleocharis ovata</i> (Roth) R. & S.	Ovate spikerush	Cyperaceae	OBL	OBL
<i>Eleocharis palustris</i> (L.) R. & S.	Creeping spikerush	Cyperaceae	OBL	OBL
<i>Eleocharis pauciflora</i> (Lightf.) Link	Few-flower spikerush	Cyperaceae	OBL	OBL
<i>Eleocharis rostellata</i> (Torr.) Torr.	Beaked spikerush	Cyperaceae	OBL	OBL

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Scientific name	Common name	Family	Reg. 9	Reg. 4
<i>Eleocharis tenuis</i> (Willd.) Schultes	Slender spikerush	Cyperaceae	FACW	---
<i>Elodea canadensis</i> Michx.	Broad water-weed	Hydrocharitaceae	OBL	OBL
<i>Elodea longivaginata</i> St. John	Long-sheath water-weed	Hydrocharitaceae	OBL	OBL
<i>Elodea nuttallii</i> (Planch.) St. John	Nuttall's water-weed	Hydrocharitaceae	OBL	OBL
<i>Elymus canadensis</i> L.	Nodding wild-rye	Poaceae	FAC	FACU
* <i>Elymus junceus</i> Fisch.	Russian wild-rye	Poaceae	FAC	FACU
<i>Elymus triticoides</i> Buckley	Creeping wild-rye	Poaceae	FAC	---
<i>Elymus virginicus</i> L.	Virginia wild-rye	Poaceae	FACW	FAC
<i>Epilobium angustifolium</i> L.	Fireweed	Onagraceae	FACU+	FAC
<i>Epilobium ciliatum</i> Raf.	Hairy willow-herb	Onagraceae	FACW-	FACW
<i>Epilobium glaberrimum</i> Barbey	Glaucus willow-herb	Onagraceae	FACW	---
<i>Epilobium latifolium</i> L.	River beauty	Onagraceae	FACW-	---
<i>Epilobium palustre</i> L.	Marsh willow-herb	Onagraceae	OBL	OBL
<i>Epipactis gigantea</i> Hook.	Giant helloborine	Orchidaceae	FACW+	OBL
<i>Equisetum arvense</i> L.	Field horsetail	Equisetaceae	FAC	FAC
<i>Equisetum fluviatile</i> L.	Water horsetail	Equisetaceae	OBL	OBL
<i>Equisetum hyemale</i> L.	Rough horsetail	Equisetaceae	FACW	FACW
<i>Equisetum laevigatum</i> A. Braun	Smooth scouring-rush	Equisetaceae	FACW	FAC
<i>Equisetum palustre</i> L.	Marsh horsetail	Equisetaceae	FACW	FACW
<i>Equisetum pratense</i> Ehrh.	Meadow horsetail	Equisetaceae	FACW	FACW
<i>Equisetum scirpoides</i> Michx.	Dwarf scouring-rush	Equisetaceae	FAC	FAC
<i>Equisetum sylvaticum</i> L.	Woodland horsetail	Equisetaceae	FACW	FACW
<i>Equisetum variegatum</i> Weber & Mohr	Variegated horsetail	Equisetaceae	FACW	FACW
<i>Eragrostis hypnoides</i> (Lam.) B.S.P.	Teal lovegrass	Poaceae	OBL	OBL
<i>Eragrostis pectinacea</i> (Michx.) Nees	Purple lovegrass	Poaceae	FAC	FAC
<i>Erigeron acris</i> L.	Bitter fleabane	Asteraceae	FACU	FAC
<i>Erigeron coulteri</i> Porter	Coulter's fleabane	Asteraceae	FACW	---
<i>Erigeron humilis</i> Grah.	Low fleabane	Asteraceae	FACW-	---
<i>Erigeron flagellaris</i> Gray	Trailing fleabane	Asteraceae	FACU+	FAC
<i>Erigeron formosissimus</i> Greene	Beautiful fleabane	Asteraceae	---	FAC
<i>Erigeron lonchophyllus</i> Hook.	Low meadow fleabane	Asteraceae	FACW	FACW
<i>Erigeron peregrinus</i> (Pursh) Greene	Wandering fleabane	Asteraceae	FACW	---
<i>Erigeron philadelphicus</i> L.	Philadelphia fleabane	Asteraceae	FACU	FACW
<i>Eriophorum chamissonis</i> C.A. Meyer	Russet cottongrass	Cyperaceae	OBL	OBL
<i>Eriophorum gracile</i> Koch	Slender cottongrass	Cyperaceae	OBL	OBL
<i>Eriophorum polystachion</i> L.	Coldswamp cottongrass	Cyperaceae	OBL	OBL
<i>Eriophorum scheuchzeri</i> Hoppe	Scheuchzer's cottongrass	Cyperaceae	OBL	---
<i>Eriophorum viridicarinatum</i> (Engelm) Fern	Green-keel cottongrass	Cyperaceae	OBL	OBL
<i>Eupatoriadelphus maculatus</i> (L.) K. & R.	Spotted Joe-Pye-weed	Asteraceae	OBL	FACW+
<i>Eustoma grandiflorum</i> (Raf.) Shinners	Showy prairie gentian	Gentianaceae	---	FACW
<i>Euthamia graminifolia</i> (L.) Nutt.	Flat-top fragrant goldenrod	Asteraceae	FAC	---
<i>Euthamia occidentalis</i> Nutt.	Western fragrant goldenrod	Asteraceae	FACW	OBL
* <i>Festuca pratensis</i> Huds.	Meadow fescue	Poaceae	FACU+	FAC
<i>Festuca rubra</i> L.	Red fescue	Poaceae	FAC	---
<i>Festuca subulata</i> Trin.	Bearded fescue	Poaceae	FAC	---
<i>Floerkea proserpinacoides</i> Willd.	False mermaid-weed	Limnanthaceae	FAC	NI
<i>Fraxinus pennsylvanica</i> Marshall	Green ash	Oleaceae	FAC	FAC
<i>Galium mexicanum</i> H.B.K.	Mexican bedstraw	Rubiaceae	FAC	---
<i>Galium palustre</i> L.	Marsh bedstraw	Rubiaceae	OBL	---
<i>Galium trifidum</i> L.	Small bedstraw	Rubiaceae	FACW+	OBL
<i>Gaultheria humifusa</i> (Grah.) Rydb.	Alpine spicy wintergreen	Ericaceae	FAC+	---
<i>Gaultheria ovatifolia</i> Gray	Slender wintergreen	Ericaceae	FAC	---
<i>Gentiana algida</i> Pallas	Whitish gentian	Gentianaceae	FACW	---
<i>Gentiana aquatica</i> L.	Moss gentian	Gentianaceae	FACW+	---

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<i>Gentiana calycosa</i> Griseb.	Ranier pleated gentian	Gentianaceae	FACW-	---
<i>Gentiana glauca</i> Pallas	Glaucus gentian	Gentiana	FAC	---
<i>Gentiana prostrata</i> Haenke	Pygmy gentian	Gentiana	FACW	---
<i>Gentianella amarella</i> (L.) Boerner	Northern gentian	Gentianaceae	FACW-	FACW
<i>Gentianella propinqua</i> (Rich.) Gillett	Four-part gentian	Gentianaceae	FACW	---
<i>Gentianella tenella</i> (Rottb.) Boerner	Dane's gentian	Gentianaceae	FACW-	---
<i>Gentianopsis detonsa</i> (Rottb.) Ma	Sheared gentian	Gentianaceae	FACW	---
<i>Gentianopsis simplex</i> (Gray) Iltis	One-flower gentian	Gentianaceae	FACW	---
<i>Geranium richardsonii</i> Fisch. & Traut.	Richardson's crane's-bill	Geraniaceae	FACU+	FAC
<i>Geum alepicum</i> Jacq.	Yellow avens	Rosaceae	FACW-	FACU
<i>Geum canadense</i> Jacq.	White avens	Rosaceae	FAC	FACU
<i>Geum macrophyllum</i> Willd.	Large-leaf avens	Rosaceae	FACW+	FACW
<i>Geum rivale</i> L.	Purple avens	Rosaceae	FACW	FACW
<i>Glaux maritima</i> L.	Sea milkwort	Primulaceae	FACW+	OBL
<i>Glyceria borealis</i> (Nash) Batch.	Small floating mannagrass	Poaceae	OBL	OBL
<i>Glyceria elata</i> (Rydb.) Jones	Tall mannagrass	Poaceae	FACW+	---
<i>Glyceria maxima</i> (Hartm.) Holm.	Reed mannagrass	Poaceae	OBL	OBL
<i>Glyceria striata</i> (Lam.) Hitchc.	Fowl mannagrass	Poaceae	OBL	OBL
<i>Glycyrrhiza lepidota</i> Pursh	American licorice	Fabaceae	FAC+	FACU
<i>Gnaphalium chilense</i> Spreng.	Cotton-batting cudweed	Asteraceae	FAC+	NI
<i>Gnaphalium palustre</i> Nutt.	Western marsh cudweed	Asteraceae	FAC+	OBL
<i>Gratiola ebracteata</i> Benth.	Bractless hedge-hyssop	Scrophulariaceae	OBL	---
<i>Gratiola neglecta</i> Torr.	Clammy hedge-hyssop	Scrophulariaceae	OBL	OBL
<i>Grindellia howellii</i> Steyer.	Howell's gumweed	Asteraceae	---	---
<i>Grindellia squarrosa</i> (Pursh) Dunal	Curly-cup gumweed	Asteraceae	FACU	---
<i>Gymnocarpium dryopteris</i> (L.) Newman	Oak fern	Polypodiaceae	FAC	---
<i>Haplopappus integrifolius</i> Gray	Entire-leaved goldenweed	Asteraceae	---	---
<i>Haplopappus lanceolatus</i> (Hook.) T. & G.	Lance-leaved goldenweed	Asteraceae	FAC	FACU
<i>Haplopappus uniflorus</i> (Hook.) T. & G.	Plantain goldenweed	Asteraceae	FAC+	---
<i>Helenium autumnale</i> L.	Common sneezeweed	Asteraceae	FACW	FACW
<i>Heleanthella quinquinervis</i> (Hook.) Gray	Nodding rockrose	Asteraceae	FACU	FACW
<i>Helianthus nuttallii</i> T. & G.	Nuttall's sunflower	Asteraceae	FACW-	FACW
<i>Helianthus tuberosus</i> L.	Jerusalem artichoke	Asteraceae	FAC	FACU
<i>Heliotropium curassavicum</i> L.	Seaside heliotrope	Boraginaceae	OBL	OBL
<i>Heracleum sphondylium</i> L.	American cow-parsnip	Asteraceae	FAC	FAC
<i>Hesperochiron pumilus</i> (Griseb.) Porter	Dwarf hesperochiron	Hydrophyllaceae	FAC	---
<i>Heterocodon rariflorum</i> Nutt.	Western pearl-flower	Campanulaceae	FAC	---
<i>Hierochloa odorata</i> (L.) Beauv.	Holy grass	Poaceae	FACW	FACW
<i>Hippuris vulgaris</i> L.	Common mare's-tail	Hippuridaceae	OBL	OBL
* <i>Holcus lanatus</i> L.	Common velvet-grass	Poaceae	FAC	---
<i>Hordeum brachyantherum</i> Nevskii	Meadow barley	Poaceae	FACW	---
<i>Hordeum jubatum</i> L.	Foxtail barley	Poaceae	FAC	FACW
<i>Howellia aquatilis</i> Gray	Howellia	Campanulaceae	OBL	---
<i>Hypericum anagalloides</i> Cham. & Schlecht.	Bog St. John's-wort	Hypericaceae	OBL	---
<i>Hypericum formosum</i> H.B.K.	Western St. John's-wort	Hypericaceae	FAC	---
<i>Hypericum majus</i> (Gray) Britton	Large St. John's-wort	Hypericaceae	FAC	FACW
<i>Impatiens aurella</i> Rydb.	Pale yellow touch-me-not	Balsaminaceae	FACW	---
<i>Impatiens ecalcarata</i> Blank.	Spurless touch-me-not	Balsaminaceae	FACW	---
<i>Impatiens noli-tangere</i> L.	Western touch-me-not	Balsaminaceae	FACW	---
<i>Iris missouriensis</i> Nutt.	Rocky Mountain iris	Iridaceae	FACW+	FACW+
<i>Iris pseudacorus</i> L.	Yellow iris	Iridaceae	OBL	---
<i>Isoetes bolanderi</i> Engelm.	Bolander's quillwort	Isoetaceae	OBL	---
<i>Isoetes echinospora</i> Durieu	Spiny-spore quillwort	Isoetaceae	OBL	---
<i>Isoetes howellii</i> Engelm.	Howell's quillwort	Isoetaceae	OBL	---

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Isoetes lacustris L.	Western quillwort	Isoetaceae	OBL	---
Isoetes nuttallii Engelm.	Nuttall's quillwort	Isoetaceae	OBL	---
Iva axillaris Pursh	Small-flower sumpweed	Asteraceae	FAC	FACU
Iva xanthifolia Nutt.	Coarse sumpweed	Asteraceae	FAC	FACU
Juncus acuminatus Michx.	Taper-tip rush	Juncaceae	OBL	---
Juncus albescens (Lange) Fern.	Northern white rush	Juncaceae	OBL	---
Juncus alpinus Villars	Richardson's rush	Juncaceae	OBL	OBL
Juncus articulatus L.	Jointed rush	Juncaceae	OBL	OBL
Juncus balticus Willd.	Baltic rush	Juncaceae	OBL	OBL
Juncus biglumis L.	Two-flower rush	Juncaceae	OBL	---
Juncus bufonius L.	Toad rush	Juncaceae	FACW+	OBL
Juncus castaneus Smith	Chestnut rush	Juncaceae	FACW	---
Juncus compressus Jacq.	Flattened rush	Juncaceae	OBL	---
Juncus confusus Cov.	Colorado rush	Juncaceae	FAC	---
Juncus covillei Piper	Coville's rush	Juncaceae	FACW	---
Juncus drummondii Meyer	Drummond's rush	Juncaceae	FACW-	---
Juncus effusus L.	Soft rush	Juncaceae	FACW+	OBL
Juncus ensifolius Wikst.	Three-stamen rush	Juncaceae	FACW	FACW
Juncus filiformis L.	Thread rush	Juncaceae	FACW+	---
*Juncus gerardii Loiseleur	Saltmeadow rush	Juncaceae	FACW+	FAC
Juncus hallii Engelm.	Hall's rush	Juncaceae	FAC	---
Juncus interior Wiegand	Inland rush	Juncaceae	FAC	FACW
Juncus longistylis Torrey	Long-style rush	Juncaceae	FACW	FACW
Juncus mertensianus Bong.	Merten's rush	Juncaceae	OBL	---
Juncus nevadensis Watson	Sierra rush	Juncaceae	FACW	---
Juncus nodosus L.	Knotted rush	Juncaceae	OBL	OBL
Juncus parryi Engelm.	Parry's rush	Juncaceae	FAC+	---
Juncus regelii Buchenau	Regel's rush	Juncaceae	FACW	---
Juncus tenuis Willd.	Slender rush	Juncaceae	FAC	FAC
Juncus torreyi Cov.	Torrey's rush	Juncaceae	FACW	FACW
Juncus tracyi Rydb.	Tracy's rush	Juncaceae	FACW	---
Juncus triglumis L.	Three-flower rush	Juncaceae	FACW	---
Juncus tweedyi Rydb.	Tweedy's rush	Juncaceae	OBL	---
Juncus vaseyi Engelm.	Vasey's rush	Juncaceae	FACW	FACW
Kalmia microphylla (Hook.) Heller	Alpine bog laurel	Ericaceae	FACW+	---
Kalmia polifolia Wangelh.	Pale laurel	Ericaceae	OBL	---
Kobresia myosuroides (Vill.) Fiori.	Pacific kobresia	Cyperaceae	FAC	---
Kobresia simpliciuscula (Wahl.) Mack.	Compound kobresia	Cyperaceae	FAC	---
*Kochia scoparia (L.) Schrad.	Mexican summer-cypress	Chenopodiaceae	FAC	FAC
Lactuca biennis (Moench) Fern.	Biennial lettuce	Asteraceae	FAC+	FAC
Lactuca ludoviciana (Nutt.) Riddell	Biennial lettuce	Asteraceae	FAC	FAC-
Lactuca pulchella (Pursh) DC.	Chicory lettuce	Asteraceae	FAC	FACU
Ledum glandulosum Nutt.	Glandular Labrador-tea	Ericaceae	FACW+	---
Leersia oryzoides (L.) Swartz	Rice cutgrass	Poaceae	OBL	OBL
Lemna minor L.	Lesser duckweed	Lemnaceae	OBL	OBL
Lemna trisulca L.	Star duckweed	Lemnaceae	OBL	OBL
*Lepidium latifolium L.	Broad-leaf pepper-grass	Brassicaceae	FAC	FACW
Leptarrhena pyrolifolia (Don) R.Br.	Leather-leaf saxifrage	Saxifragaceae	FACW	---
Leptochloa fascicularis (Lam.) Gray	Bearded sprangle-top	Poaceae	FACW	OBL
Ligusticum canbyi Coult. & Rose	Canby's lovage	Apiaceae	FAC	---
Ligusticum tenuifolium S. Wats.	Slender-leaf lovage	Apiaceae	FACW	---
Ligusticum verticillatum (Geyer) C. & R.	Idaho lovage	Apiaceae	FACW	---
Lilaea scilloides (Poir.) Haum.	Flowering quillwort	Juncaginaceae	OBL	---
Lilium philadelphicum L.	Wood lily	Liliaceae	FAC-	FAC

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<i>Limosella aquatica</i> L.	Northern mudwort	Scrophulariaceae	OBL	OBL
<i>Liparis loeselii</i> (L.) Rich.	Fen orchid	Orchidaceae	FACW	OBL
<i>Listera borealis</i> Morong	Northern twayblade	Orchidaceae	FACW	---
<i>Listera caurina</i> Piper	Western twayblade	Orchidaceae	FACW	---
<i>Listera convallarioides</i> (Sw.) Elliott	Broad-leaf twayblade	Orchidaceae	FACU	FACW
<i>Listera cordata</i> (L.) R.Br.	Heart-leaf twayblade	Orchidaceae	FACW	---
<i>Lloydia serotina</i> (L.) Reich.	Common alpine lily	Liliaceae	FAC	---
<i>Lobelia kalmii</i> L.	Brook lobelia	Campanulaceae	OBL	OBL
<i>Lobelia spicata</i> Lam.	Pale-spike lobelia	Campanulaceae	---	FAC
<i>Lomatogonium rotatum</i> (L.) Fern.	Marsh fellwort	Gentianaceae	OBL	---
<i>Lonicera caerulea</i> L.	Sweet-berry honeysuckle	Caprifoliaceae	FAC	---
<i>Lonicera involucrata</i> Spreng.	Four-line honeysuckle	Caprifoliaceae	FAC	---
* <i>Lotus corniculatus</i> L.	Bird's-foot trefoil	Fabaceae	FAC	FACU
<i>Lupinus lepidus</i> Lindl.	Prairie lupine	Fabaceae	---	---
<i>Lupinus polyphyllus</i> Lindl.	Large-leaved lupine	Fabaceae	FAC+	---
<i>Luzula wahlenbergii</i> Rupr.	Wahlenberg's woodrush	Juncaceae	FACW	---
<i>Lycopodium alpinum</i> L.	Alpine clubmoss	Lycopodiaceae	FAC	---
<i>Lycopodium annotinum</i> L.	Stiff clubmoss	Lycopodiaceae	FAC	---
<i>Lycopodium clavatum</i> L.	Running pine	Lycopodiaceae	FAC	---
<i>Lycopodium complanatum</i> L.	Trailing clubmoss	Lycopodiaceae	FAC	---
<i>Lycopodium inundatum</i> L.	Northern bog clubmoss	Lycopodiaceae	OBL	---
<i>Lycopus americanus</i> Barton	American bugleweed	Lamiaceae	OBL	OBL
<i>Lycopus asper</i> Greene	Rough bugleweed	Lamiaceae	OBL	OBL
<i>Lycopus uniflorus</i> Michx.	Northern bugleweed	Lamiaceae	OBL	OBL
<i>Lysichiton americanum</i> Hult. & St.John	Yellow skunk-cabbage	Araceae	OBL	---
<i>Lysimachia ciliat</i> L.	Fringed loosestrife	Primulaceae	FACW+	FACW
<i>Lysimachia thyrsoflora</i> L.	Tufted loosestrife	Primulaceae	OBL	OBL
<i>Lythrum alatum</i> Pursh	Winged loosestrife	Primulaceae	---	OBL
* <i>Lythrum salicaria</i> L.	Purple loosestrife	Lythraceae	OBL	OBL
* <i>Marrubium vulgare</i> L.	Common horehound	Lamiaceae	FACU+	FAC
<i>Marsilea vestita</i> Hook. & Grev.	Hairy water fern	Marsileaceae	OBL	OBL
* <i>Matricaria maritima</i> L.	False mayweed	Asteraceae	FACU	FAC
* <i>Medicago lupulina</i> L.	Black medic	Fabaceae	FAC	FACU
<i>Melampyrum lineare</i> Desr.	American cow-wheat	Scrophulariaceae	FAC	---
<i>Melica spectabilis</i> Scribn.	Showy melic grass	Poaceae	FAC	---
<i>Mentha arvensis</i> L.	Field mint	Lamiaceae	FAC	FACW
* <i>Mentha spicata</i> L.	Spearmint	Lamiaceae	OBL	NI
<i>Menyanthes trifoliata</i> L.	Buckbean	Menyanthaceae	OBL	OBL
<i>Mertensia bella</i> Piper	Oregon bluebells	Boraginaceae	FACW	---
<i>Mertensia ciliata</i> (Torr.) G.Don	Streamside bluebells	Boraginaceae	FACW+	FACW
<i>Mertensia paniculata</i> (Ait.) G.Don	Tall bluebells	Boraginaceae	FAC	---
<i>Mimulus breviflorus</i> Piper	Short-flower monkey-flower	Scrophulariaceae	FACW	---
<i>Mimulus floribundus</i> Lindl.	Floriferous monkey-flower	Scrophulariaceae	OBL	OBL
<i>Mimulus glabratus</i> H.B.K.	Round-leaf monkey-flower	Scrophulariaceae	OBL	OBL
<i>Mimulus guttatus</i> DC.	Common large monkey-flower	Scrophulariaceae	OBL	OBL
<i>Mimulus lewisii</i> Pursh	Lewis monkey-flower	Scrophulariaceae	FACW+	---
<i>Mimulus moschatus</i> Lindl.	Muskflower	Scrophulariaceae	FACW+	---
<i>Mimulus primuloides</i> Benth.	Primrose monkeyflower	Scrophulariaceae	FACW+	---
<i>Mimulus tilingii</i> Regel	Subalpine monkey-flower	Scrophulariaceae	OBL	---
<i>Minuartia rubella</i> (Wahl.) Hiern.	Boreal stitchwort	Caryophyllaceae	FACU-	FAC
<i>Mitella breweri</i> Gray	Feathery bishop's-cap	Saxifragaceae	FACW+	
<i>Mitella nuda</i> L.	Naked bishop's-cap	Saxifragaceae	FACW	OBL
<i>Mitella pentandra</i> Hook.	Five-point bishop's-cap	Saxifragaceae	FACW+	---
<i>Mitella stauropetala</i> Piper	Side-flower bishop's-cap	Saxifragaceae	FAC	---

Appendix A: Wetland Plants Occurring in Montana

Scientific name	Common name	Family	Reg. 9	Reg. 4
Moehringia lateriflora (L.) Fenzl	Grove sandwort	Caryophyllaceae	FAC	—
*Mollugo verticillata L.	Green carpet-weed	Aizoaceae	FAC	FAC
Monolepis nuttalliana (Schultes) Greene	Nuttall's poverty-weed	Chenopodiaceae	FAC-	FAC
Montia chamissoi (Spreng.) Greene	Chamisso's miner's-lettuce	Portulacaceae	OBL	—
Montia dichotoma (Nutt.) Howell	Dwarf miner's-lettuce	Portulacaceae	FAC	—
Montia parvifolia (DC.) Greene	Little-leaf miner's-lettuce	Portulacaceae	FACW-	—
Muhlenbergia andina (Nutt.) Hitchc.	Foxtail muhly	Poaceae	FAC+	—
Muhlenbergia asperifolia (Trin.) Parodi	Alkali muhly	Poaceae	FACW	FACW
Muhlenbergia filiformis (Wats.) Rydb.	Pullup muhly	Poaceae	FACW	FACW
Muhlenbergia glomerata (Willd.) Trin.	Marsh muhly	Poaceae	FACW	FACW+
Muhlenbergia mexicana (L.) Trin.	Mexican muhly	Poaceae	FAC	FACW
Muhlenbergia minutissima (Steud.) Swallen	Least muhly	Poaceae	FAC	FAC-
Muhlenbergia racemosa (Michx.) B.S.P.	Green muhly	Poaceae	FAC	FACW
Muhlenbergia richardsonii (Trin.) Rydb.	Mat muhly	Poaceae	FACW	FAC
*Myosotis arvensis (L.) J.Hill	Field forget-me-not	Boraginaceae	FAC	—
Myosotis laxa Lehm.	Bay forget-me-not	Boraginaceae	OBL	—
Myosotis scorpioides L.	True forget-me-not	Boraginaceae	FACW	OBL
Myosotis sylvatica Hoffm.	Woodland forget-me-not	Boraginaceae	FAC	FACW
Myosotis verna Nutt.	Spring forget-me-not	Boraginaceae	FAC-	FAC
Myosurus aristatus Hook.	Sedge mouse-tail	Ranunculaceae	OBL	NI
Myosurus minimus L.	Tiny mouse-tail	Ranunculaceae	OBL	OBL
*Myriophyllum spicatum L.	Eurasian water-milfoil	Haloragaceae	OBL	OBL
Myriophyllum verticillatum L.	Whorled water-milfoil	Haloragaceae	OBL	OBL
Najas flexilis (Willd.) Rostk. & Schmidt	Slender naiad	Najadaceae	OBL	OBL
Najas guadalupensis (Spreng.) Morong	Southern naiad	Najadaceae	OBL	OBL
*Nasturtium officinale R.Br.	True water-cress	Brassicaceae	OBL	OBL
Navarretia intertexta (Benth.) Hook.	Needle-leaf navarretia	Polemoniaceae	FACW	—
*Nepeta cataria L.	Catnip	Lamiaceae	FAC	FACU
Nuphar luteum (L.) Sibth.Smith	Yellow cow-lily	Nymphaeaceae	OBL	OBL
Nymphaea odorata Soland.	White water-lily	Nymphaeaceae	OBL	—
Nymphaea tetragona Georgi	Pygmy water-lily	Nymphaeaceae	OBL	—
Oenothera flava (A.Nels.) Garrett	Yellow evening-primrose	Onagraceae	FAC+	FACW
Oenothera villosa Thunb.	Hairy evening-primrose	Onagraceae	FAC+	FACU
Ophioglossum vulgatum L.	Northern adder's-tongue	Ophioglossaceae	FACW	FACW
Oplopanax horridus (Smith) Miq.	Devil's club	Araliaceae	FAC	—
Osmorhiza purpurea (Coult. & Rose) Suksd.	Purple sweet cicely	Apiaceae	FAC+	—
Panicum capillare L.	Witchgrass	Poaceae	FAC	FAC
Panicum occidentale Scribn.	Western panic grass	Poaceae	FACW	—
Panicum virgatum L.	Switchgrass	Poaceae	FAC+	FAC
Parnassia fimbriata Koenig	Fringed grass-of-Parnassus	Saxifragaceae	OBL	—
Parnassia kotzebuei Spreng.	Kotzebue's grass-of-Parnassus	Saxifragaceae	OBL	—
Parnassia palustris L.	Northern grass-of-Parnassus	Saxifragaceae	OBL	OBL
Parnassia parviflora DC.	Small grass-of-Parnassus	Saxifragaceae	OBL	OBL
Pedicularis groenlandica Retz.	Elephant's-head lousewort	Scrophulariaceae	OBL	—
Penstemon attenuatus Lindl.	Sulphur beardtongue	Scrophulariaceae	FAC	—
Petasites frigidus (L.) Fr.	Arctic sweet coltsfoot	Asteraceae	FACW	FAC
Petasites sagittatus (Pursh) Gray	Arrow-leaf sweet coltsfoot	Asteraceae	FACW+	FACW+
Phalaris arundinacea L.	Reed canary grass	Poaceae	FACW	FACW+
Phippsia algida (Phipps) R.Br.	Ice grass	Poaceae	FACW+	—
Phleum alpinum L.	Alpine timothy	Poaceae	FAC	FACW
Phlox kelseyi Britt.	Kelsey's phlox	Polemoniaceae	NI	NI
Phragmites australis (Cav.) Steud.	Common reed	Poaceae	FACW+	FACW
Phyllodoce empetriformis (Smith) Don	Pink mountain-heath	Ericaceae	FAC	—
Phyllodoce glanduliflora (Hook.) Cov.	Yellow mountain-heath	Ericaceae	FAC	—

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Scientific name	Common name	Family	Reg. 9	Reg. 4
<i>Physostegia parviflora</i> Gray	Purple dragon-head	Lamiaceae	FACW	FACW
<i>Physostegia virginiana</i> (L.) Benth.	False dragonhead	Lamiaceae	—	OBL
<i>Picea engelmannii</i> Engelm.	Engelmann's spruce	Pinaceae	FAC	—
<i>Pinguicula vulgaris</i> L.	Common butterwort	Lentibulariaceae	OBL	—
<i>Piperia unalascensis</i> (Spreng.) Rydb.	Alaska reinorchid	Orchidaceae	FAC	FAC
<i>Plagiobothrys leptocladus</i> (Greene) Johnst.	Fine-branch popcorn-flower	Boraginaceae	FACW	—
<i>Plagiobothrys scouleri</i> (H. & A.) Johnst.	Scouler popcorn-flower	Boraginaceae	FACW	FACW+
<i>Plantago elongata</i> Pursh	Slender plantain	Plantaginaceae	FACW	FACW
<i>Plantago eriopoda</i> Torr.	Saline plantain	Plantaginaceae	FACW	FAC
* <i>Plantago lanceolata</i> L.	English plantain	Plantaginaceae	FACU+	FAC
* <i>Plantago major</i> L.	Common plantain	Plantaginaceae	FAC+	FAC
<i>Platanthera dilatata</i> (Pursh) Beck	Leafy white orchid	Orchidaceae	FACW+	FACW
<i>Platanthera hyperborea</i> (L.) Lindl.	Northern green orchid	Orchidaceae	FACW+	FACW+
<i>Platanthera obtusata</i> (Pursh) Lindl.	Small northern bog-orchid	Orchidaceae	FACW	—
<i>Platanthera orbiculata</i> (Pursh) Lindl.	Large round-leaf orchid	Orchidaceae	FACW	FAC
<i>Poa alpina</i> L.	Alpine bluegrass	Poaceae	FAC	—
<i>Poa arida</i> Vasey	Plains bluegrass	Poaceae	FACU+	FAC
<i>Poa glaucifolia</i> Scribn. & Williams	Swallen's bluegrass	Poaceae	FAC	FACW
<i>Poa juncifolia</i> Scribn.	Alkali bluegrass	Poaceae	FACU+	FAC
<i>Poa leptocoma</i> Trin.	Bog bluegrass	Poaceae	FACW+	—
* <i>Poa palustris</i> L.	Fowl bluegrass	Poaceae	FAC	FACW
* <i>Poa trivialis</i> L.	Rough bluegrass	Poaceae	FACW-	FACW
<i>Podagrostis humilis</i> (Vasey) Bjoerkm.	Alpine bentgrass	Poaceae	FACW	—
<i>Podagrostis thurberiana</i> (Hitchc.) Hulten	Thurber bentgrass	Poaceae	FACW	—
<i>Polemonium occidentale</i> Greene	Western Jacob's-ladder	Polemoniaceae	FACW	—
<i>Polygonum amphibium</i> L.	Water smartweed	Polygonaceae	OBL	OBL
<i>Polygonum aviculare</i> L.	Prostrate knotweed	Polygonaceae	FACW-	FACU
<i>Polygonum bistortoides</i> Pursh	American bistort	Polygonaceae	FACW+	—
* <i>Polygonum convolvulus</i> L.	Black bindweed	Polygonaceae	FACU-	FAC
<i>Polygonum douglasii</i> Greene	Douglas' knotweed	Polygonaceae	FACU	FAC
<i>Polygonum erectum</i> L.	Erect knotweed	Polygonaceae	FACU-	OBL
* <i>Polygonum hydropiper</i> L.	Marshpepper smartweed	Polygonaceae	OBL	OBL
<i>Polygonum kelloggii</i> Greene	Kellogg knotweed	Polygonaceae	FAC	—
* <i>Polygonum lapathifolium</i> L.	Willow-weed	Polygonaceae	FACW+	OBL
<i>Polygonum pensylvanicum</i> L.	Pennsylvania smartweed	Polygonaceae	FACW	FACW
<i>Polygonum persicaria</i> L.	Lady's thumb	Polygonaceae	FACW	FACW
<i>Polygonum polygaloides</i> Meisn.	Polygala knotweed	Polygonaceae	FACW-	—
<i>Polygonum punctatum</i> Elliott	Dotted smartweed	Polygonaceae	OBL	OBL
<i>Polygonum viviparum</i> L.	Viviparous knotweed	Polygonaceae	FAC	FACW
<i>Polypogon monspeliensis</i> (L.) Desf.	Annual rabbit-foot grass	Poaceae	FACW+	OBL
<i>Populus acuminata</i> Rydb.	Lance-leaf cottonwood	Salicaceae	—	FAC
<i>Populus angustifolia</i> James	Narrow-leaf cottonwood	Salicaceae	FACW	FACW
<i>Populus balsamifera</i> L.	Balsam poplar	Salicaceae	FAC	FACW
<i>Populus deltoides</i> Marshall	Eastern cottonwood	Salicaceae	FAC	FAC
<i>Populus tremula</i> L.	Quaking aspen	Salicaceae	FAC+	FAC
* <i>Portulaca oleracea</i> L.	Common purslane	Portulacaceae	FAC	FACU
<i>Potamogeton alpinus</i> Balb.	Alpine pondweed	Potamogetonaceae	OBL	OBL
<i>Potamogeton amplifolius</i> Tuckerman	Large-leaf pondweed	Potamogetonaceae	OBL	OBL
<i>Potamogeton crispus</i> L.	Curley pondweed	Potamogetonaceae	OBL	OBL
<i>Potamogeton diversifolius</i> Raf.	Water-thread pondweed	Potamogetonaceae	OBL	OBL
<i>Potamogeton epihydrus</i> Raf.	Ribbon-leaf pondweed	Potamogetonaceae	OBL	OBL
<i>Potamogeton filiformis</i> Pers.	Fine-leaf pondweed	Potamogetonaceae	OBL	OBL
<i>Potamogeton foliosus</i> Raf.	Leafy pondweed	Potamogetonaceae	OBL	OBL
<i>Potamogeton friesii</i> Rupr.	Fries' pondweed	Potamogetonaceae	OBL	OBL

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Potamogeton gramineus L.	Grassy pondweed	Potamogetonaceae	OBL	OBL
Potamogeton illinoensis Morong	Illinois pondweed	Potamogetonaceae	OBL	OBL
Potamogeton natans L.	Floating-leaf pondweed	Potamogetonaceae	OBL	OBL
Potamogeton nodosus Poir.	Long-leaf pondweed	Potamogetonaceae	OBL	OBL
Potamogeton obtusifolius Mertens & Koch	Blunt-leaf pondweed	Potamogetonaceae	OBL	—
Potamogeton pectinatus L.	Sago pondweed	Potamogetonaceae	OBL	OBL
Potamogeton praelongus Wulfen	White-stem pondweed	Potamogetonaceae	OBL	OBL
Potamogeton pusillus L.	Small pondweed	Potamogetonaceae	OBL	OBL
Potamogeton richardsonii (Benn.) Rydb.	Richardson's pondweed	Potamogetonaceae	OBL	OBL
Potamogeton robbinsii Oakes	Robbin's pondweed	Potamogetonaceae	OBL	—
Potamogeton vaginatus Turcz.	Sheathed pondweed	Potamogetonaceae	OBL	OBL
Potamogeton zosteriformis Fern.	Flat-stem pondweed	Potamogetonaceae	OBL	OBL
Potentilla anserina L.	Silverweed	Rosaceae	OBL	OBL
Potentilla biennis Greene	Biennial cinquefoil	Rosaceae	FACW	FACW
Potentilla diversifolia Lehm.	Varileaf cinquefoil	Rosaceae	FACW	FACU
Potentilla drummondii Lehm.	Drummond's cinquefoil	Rosaceae	FAC	—
Potentilla fruticosa L.	Shrubby cinquefoil	Rosaceae	FAC-	FACW
Potentilla glandulosa Lindl.	Gland cinquefoil	Rosaceae	FAC-	FAC
Potentilla gracilis Hook.	Northwest cinquefoil	Rosaceae	FAC	FAC
*Potentilla norvegica L.	Norwegian cinquefoil	Rosaceae	FAC	FAC
Potentilla palustris (L.) Scop.	Marsh cinquefoil	Rosaceae	OBL	NI
Potentilla paradoxa Nutt.	Bushy cinquefoil	Rosaceae	FACW	FACW
Potentilla plattensis Nutt.	Platte Cinquefoil	Rosaceae	FACW	FACW+
Potentilla rivalis Nutt.	Brook cinquefoil	Rosaceae	FACW	OBL
Primula incana Jones	American primrose	Primulaceae	OBL	FACW
Primula parryi Gray	Parry's primrose	Primulaceae	FAC	—
Prunella vulgaris L.	Heal-all	Lamiaceae	FACU+	FACW
Psilocarphus brevissimus Nutt.	Dwarf wooly-heads	Asteraceae	FACW+	—
Puccinellia distans (L.) Parl.	Weeping alkali-grass	Poaceae	OBL	FACW
Puccinellia nuttalliana (Schultes) Hitch.	Nuttall's alkali-grass	Poaceae	OBL	OBL
Puccinellia pauciflora (Presl) Munz	Weak manna-grass	Poaceae	OBL	OBL
Pyrola asarifolia Michx.	Pink wintergreen	Ericaceae	FACU	FACU
Pyrola chlorantha Swartz	Greenish-flower wintergreen	Ericaceae	FAC	—
Pyrola uniflora L.	One-flowered wintergreen	Ericaceae	FACU	FAC
Ranunculus abortivus L.	Subalpine buttercup	Ranunculaceae	FACW-	FACW
Ranunculus acrifolius Gray	Sharp-leaf buttercup	Ranunculaceae	FACW-	—
*Ranunculus acris L.	Tall buttercup	Ranunculaceae	FACW-	FACW
Ranunculus adoneus Gray	Alpine buttercup	Ranunculaceae	FACW	—
Ranunculus alismifolius Benth.	Dwarf buttercup	Ranunculaceae	FACW	—
Ranunculus aquatilis L.	White water buttercup	Ranunculaceae	OBL	OBL
Ranunculus cardiophyllus Hook.	Heart-leaf buttercup	Ranunculaceae	FACW	FACW
Ranunculus cymbalaria Pursh	Seaside buttercup	Ranunculaceae	OBL	OBL
Ranunculus eschscholtzii Schlecht.	Eschscholtz buttercup	Ranunculaceae	FACW	—
Ranunculus flabellaris Raf.	Yellow water buttercup	Ranunculaceae	OBL	OBL
Ranunculus flammula L.	Spearwort buttercup	Ranunculaceae	FACW	—
Ranunculus glaberrimus Hook.	Sagebrush buttercup	Ranunculaceae	FAC	FAC
Ranunculus gmelinii DC.	Small yellow water buttercup	Ranunculaceae	FACW	FACW+
Ranunculus hyperboreus Rottb.	Arctic buttercup	Ranunculaceae	OBL	—
Ranunculus inamoenus Greene	Graceful buttercup	Ranunculaceae	FACW	FACW
Ranunculus jovis A. Nels.	Utah buttercup	Ranunculaceae	FAC+	—
Ranunculus longirostris Godr.	Long-beak water buttercup	Ranunculaceae	OBL	OBL
Ranunculus macounii Britton	Macoun's buttercup	Ranunculaceae	OBL	OBL
Ranunculus natans Meyer	Nodding buttercup	Ranunculaceae	OBL	—
Ranunculus orthorhynchus Hook.	Straight-beak buttercup	Ranunculaceae	FACW-	—

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<i>Ranunculus pedatifidus</i> Smith	Surefoot buttercup	Ranunculaceae	FAC	---
<i>Ranunculus pensylvanicus</i> L.F.	Pennsylvania buttercup	Ranunculaceae	FACW	FACW+
<i>Ranunculus populago</i> Greene	Popular buttercup	Ranunculaceae	FACW	---
<i>Ranunculus pygmaeus</i> Wahl.	Dwarf buttercup	Ranunculaceae	FAC+	---
* <i>Ranunculus repens</i> L.	Creeping buttercup	Ranunculaceae	FACW	---
<i>Ranunculus sceleratus</i> L.	Celery-leaf buttercup	Ranunculaceae	OBL	OBL
<i>Ranunculus subrigidus</i> Drew	Pond buttercup	Ranunculaceae	OBL	OBL
<i>Ranunculus uncinatus</i> Don	Hooked buttercup	Ranunculaceae	FAC	---
<i>Ranunculus verecundus</i> Rob.	Wetslope buttercup	Ranunculaceae	FACW-	---
<i>Rhamnus alnifolia</i> L'Herr	Alder-leaf buckthorn	Ranunculaceae	FACU	FACW
<i>Rhododendron albiflorum</i> Hook.	White-flower rhododendron	Ericaceae	FAC	---
<i>Ribes americanum</i> Mill.	Black wild currant	Grossulariaceae	FAC	FACW
<i>Ribes aureum</i> Pursh	Golden currant	Grossulariaceae	FAC+	---
<i>Ribes hudsonianum</i> Rich.	Hudson Bay currant	Grossulariaceae	OBL	---
<i>Ribes inerme</i> Rydb.	White-stem gooseberry	Grossulariaceae	FAC	---
<i>Ribes lacustre</i> (Pers.) Poir.	Prickly currant	Grossulariaceae	FAC+	FACW
<i>Ribes triste</i> Pallas	Swamp red currant	Grossulariaceae	FAC	OBL
<i>Romanzoffia sitchensis</i> Bong.	Sitka mistmaiden	Hydrophyllaceae	FACW-	---
<i>Rorippa calycina</i> (Engelm.) Rydb.	Persistent-sepal yellow-cress	Brassicaceae	FACW	OBL
<i>Rorippa curvipes</i> Greene	Blunt-leaf yellow-cress	Brassicaceae	FACW	OBL
<i>Rorippa curvisiliqua</i> (Hook.) Britt.	Curve-pod yellow-cress	Brassicaceae	FACW+	---
<i>Rorippa palustris</i> (L.) Besser	Bog yellow-cress	Brassicaceae	OBL	OBL
<i>Rorippa sinuata</i> (Nutt.) Hitchc.	Spreading yellow-cress	Brassicaceae	FAC+	FACW
<i>Rorippa sylvestris</i> (L.) Besser	Creeping yellow-cress	Brassicaceae	OBL	FACW+
<i>Rorippa tenerrima</i> Greene	Modoc County yellow-cress	Brassicaceae	NI	FAC
<i>Rorippa truncata</i> (Jeps.) Stuckey	Wild yellow-cress	Brassicaceae	NI	FAC
<i>Rotala ramosior</i> (L.) Koehne	Toothcup	Lythraceae	OBL	NI
<i>Rubus acaulis</i> Michx.	Dwarf raspberry	Rosaceae	FAC+	---
<i>Rubus pubescens</i> Raf.	Dwarf blackberry	Rosaceae	FAC	FACW
<i>Rudbeckia laciniata</i> L.	Cut-leaf coneflower	Asteraceae	FAC	FACU
* <i>Rumex acetosella</i> L.	Sheep Sorrel	Polygonaceae	FACU	FAC
* <i>Rumex crispus</i> L.	Curly dock	Polygonaceae	FACW	FACW
<i>Rumex maritimus</i> L.	Golden dock	Polygonaceae	FACW+	FACW+
<i>Rumex occidentalis</i> Wats.	Western dock	Polygonaceae	FACW+	OBL
<i>Rumex salicifolius</i> Weinm.	Willow dock	Polygonaceae	FACW	---
<i>Ruppia maritima</i> L.	Widgeon-grass	Ruppiales	OBL	OBL
<i>Sagina procumbens</i> L.	Procumbent pearlwort	Caryophyllaceae	FAC	---
<i>Sagina saginoides</i> (L.) Karst.	Arctic pearlwort	Caryophyllaceae	FACW-	FACW
<i>Sagittaria cuneata</i> Sheldon	Northern arrow-head	Alismataceae	OBL	OBL
<i>Sagittaria latifolia</i> Willd.	Broad-leaf arrow-head	Alismataceae	OBL	OBL
<i>Salicornia rubra</i> Nels.	Red saltwort	Chenopodiaceae	OBL	OBL
* <i>Salix alba</i> L.	White willow	Salicaceae	FACW	FACW
<i>Salix amygdaloides</i> Anderss.	Peach-leaf willow	Salicaceae	FACW	FACW
<i>Salix arctica</i> Pallas	Arctic willow	Salicaceae	FACW-	---
<i>Salix barclayi</i> Anderss.	Barclay willow	Salicaceae	FACW	---
<i>Salix barrattiana</i> Hook.	Barratt willow	Salicaceae	FACW	---
<i>Salix bebbiana</i> Sarg.	Bebb willow	Salicaceae	FACW	FACW
<i>Salix boothii</i> Dorn	Booth's willow	Salicaceae	OBL	---
<i>Salix brachycarpa</i> Nutt.	Barren-ground willow	Salicaceae	FACW+	---
<i>Salix candida</i> Willd.	Hoary willow	Salicaceae	OBL	OBL
<i>Salix commutata</i> Bebb	Under-green willow	Salicaceae	OBL	---
<i>Salix discolor</i> Muhl.	Pussy willow	Salicaceae	FACW	FACW
<i>Salix drummondiana</i> Hook.	Drummond willow	Salicaceae	FACW	---
<i>Salix eastwoodiae</i> Heller	Mountain willow	Salicaceae	FACW	---

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<i>Salix eriocephala</i> Michx.	Missouri River willow	Salicaceae	---	FACW
<i>Salix exigua</i> Nutt.	Sandbar willow	Salicaceae	OBL	FACW+
<i>Salix farriar</i> Ball	Farr willow	Salicaceae	OBL	---
* <i>Salix fragilis</i> L.	Crack willow	Salicaceae	---	FAC
<i>Salix geyerana</i> Anderss.	Geyer willow	Salicaceae	FACW+	---
<i>Salix glauca</i> L.	Gray-leaf willow	Salicaceae	FACW	---
<i>Salix lasiandra</i> Benth.	Pacific willow	Salicaceae	FACW+	FACW+
<i>Salix lemmonii</i> Bebb	Lemmon's willow	Salicaceae	FACW+	---
<i>Salix lutea</i> Nutt.	Yellow willow	Salicaceae	OBL	FACW+
<i>Salix melanopsis</i> Nutt.	Dusky willow	Salicaceae	FACW	---
<i>Salix planifolia</i> Pursh	Diamond-leaf willow	Salicaceae	OBL	OBL
<i>Salix pseudomonticola</i> Ball	Park willow	Salicaceae	FACW	FACW
<i>Salix rigida</i> Muhl.	Heart-leaf willow	Salicaceae	OBL	FACW
<i>Salix scoulerana</i> Hook.	Scouler willow	Salicaceae	FAC	---
<i>Salix serissima</i> (Bailey) Fern.	Autumn willow	Salicaceae	---	OBL
<i>Salix sitchensis</i> Bong.	Sitka willow	Salicaceae	FACW	---
<i>Salix tweedyi</i> (Rose) Ball	Tweedy willow	Salicaceae	FACW+	---
<i>Salix vestita</i> Pursh	Rock willow	Salicaceae	FAC	---
<i>Salix wolfii</i> Bebb	Wolf willow	Salicaceae	FACW+	---
<i>Saxifraga adscendens</i> L.	Rock saxifrage	Saxifragaceae	FAC	---
<i>Saxifraga arguta</i> DON	Brook saxifrage	Saxifragaceae	FACW+	---
<i>Saxifraga cernua</i> L.	Nodding saxifrage	Saxifragaceae	FACW-	---
<i>Saxifraga cespitosa</i> L.	Tufted saxifrage	Saxifragaceae	FAC	---
<i>Saxifraga debilis</i> Gray	Pigmy saxifrage	Saxifragaceae	FACW-	---
<i>Saxifraga ferruginea</i> Grah.	Rusty-hair saxifrage	Saxifragaceae	FAC	---
<i>Saxifraga integrifolia</i> Hook.	Columbia saxifrage	Saxifragaceae	FACW	---
<i>Saxifraga lyallii</i> Engl.	Red-stem saxifrage	Saxifragaceae	FACW	---
<i>Saxifraga mertensiana</i> Bong.	Merten's saxifrage	Saxifragaceae	FACW	---
<i>Saxifraga nidifica</i> Greene	Peak saxifrage	Saxifragaceae	FACW	---
<i>Saxifraga occidentalis</i> Wats.	Western saxifrage	Saxifragaceae	FAC	FAC
<i>Saxifraga oregana</i> Howell	Oregon saxifrage	Saxifragaceae	FACW+	---
<i>Saxifraga rhomboidea</i> Greene	Diamond-leaf saxifrage	Saxifragaceae	FAC	---
<i>Saxifraga rivularis</i> L.	Alpine-brook saxifrage	Saxifragaceae	FAC+	---
<i>Scheuchzeria palustris</i> L.	Pod-grass	Scheuchzeriaceae	OBL	---
<i>Scirpus acutus</i> Bigel.	Hard-stem bulrush	Cyperaceae	OBL	OBL
<i>Scirpus americanus</i> Pers.	Oney's bulrush	Cyperaceae	OBL	OBL
<i>Scirpus cespitosus</i> L.	Tufted bulrush	Cyperaceae	OBL	---
<i>Scirpus cyperinus</i> (L.) Kunth.	Wool-grass	Cyperaceae	NI	OBL
<i>Scirpus fluviatilis</i> (Torr.) Gray	River bulrush	Cyperaceae	OBL	OBL
<i>Scirpus heterochaetus</i> Chase	Slender bulrush	Cyperaceae	OBL	OBL
<i>Scirpus maritimus</i> L.	Saltmarsh bulrush	Cyperaceae	OBL	NI
<i>Scirpus microcarpus</i> Presl	Small-fruit bulrush	Cyperaceae	OBL	OBL
<i>Scirpus nevadensis</i> Wats.	Nevada bulrush	Cyperaceae	OBL	OBL
<i>Scirpus pallidus</i> (Britton) Fern.	Cloaked bulrush	Cyperaceae	OBL	OBL
<i>Scirpus pungens</i> Vahl	Three-square bulrush	Cyperaceae	OBL	OBL
<i>Scirpus subterminalis</i> Torr.	Subterminal bulrush	Cyperaceae	OBL	---
<i>Scirpus validus</i> Vahl	Soft-stem bulrush	Cyperaceae	OBL	OBL
* <i>Scolochloa festucacea</i> (Willd.) Link	Sprangle-top	Poaceae	OBL	OBL
<i>Scrophularia lanceolata</i> Pursh	Lance-leaf figwort	Scrophulariaceae	FAC	FAC-
<i>Scutellaria galericulata</i> L.	Hooded skullcap	Lamiaceae	OBL	OBL
<i>Sedum rhodanthum</i> Gray	Red-pod stonecrop	Crassulaceae	FACW	---
<i>Selaginella selaginoides</i> (L.) Link	Club spike-moss	Selaginellaceae	FACW+	---
<i>Senecio crassulus</i> Gray	Thick-leaf groundsel	Asteraceae	FACU	OBL
<i>Senecio cymbalarioides</i> Buek	Cleft-leaf groundsel	Asteraceae	FACW+	---

Appendix A: Wetland Plants Occurring in Montana

Scientific name	Common name	Family	Reg. 9	Reg. 4
<i>Senecio debilis</i> Nutt.	Weak groundsel	Asteraceae	FACW	—
<i>Senecio eremophilus</i> Rich.	Desert groundsel	Asteraceae	FACU	FAC
<i>Senecio foetidus</i> Howell	Sweetmarsh groundsel	Asteraceae	FACW-	—
<i>Senecio hydrophilus</i> Nutt.	Water groundsel	Asteraceae	OBL	OBL
<i>Senecio indecorus</i> Greene	Elegant groundsel	Asteraceae	FACW	—
<i>Senecio integerrimus</i> Nutt.	Lambstongue groundsel	Asteraceae	FAC	FAC
<i>Senecio lugens</i> Richards.	Black-tip groundsel	Asteraceae	FAC	—
<i>Senecio pauciflorus</i> Pursh	Few-flower groundsel	Asteraceae	FAC	—
<i>Senecio pauperculus</i> Michx.	Balsam groundsel	Asteraceae	FACW	FAC
<i>Senecio pseud aureus</i> Rydb.	Golden groundsel	Asteraceae	FACW	FACW
<i>Senecio serra</i> Hook.	Butterweed groundsel	Asteraceae	FAC	—
<i>Senecio sphaerocephalus</i> Greene	Ball-head groundsel	Asteraceae	FACW	—
<i>Senecio triangularis</i> Hook.	Arrow-leaf groundsel	Asteraceae	FACW+	—
* <i>Senecio vulgaris</i> L.	Common groundsel	Asteraceae	FACU	FAC
* <i>Setaria glauca</i> (L.) Beauv.	Yellow bristle-grass	Poaceae	FAC	FACU
<i>Sidalcea oregana</i> (T. & G.) Gray	Oregon checker-mallow	Malvaceae	FACW-	—
<i>Silene menziesii</i> Hook.	Menzies' campion	Caryophyllaceae	FAC	—
<i>Silene uralensis</i> (Rupr.) Bocq.	Nodding campion	Caryophyllaceae	FACW-	—
<i>Sisyrinchium idahoense</i> Bickn.	Idaho blue-eye-grass	Iridaceae	FACW	—
<i>Sisyrinchium montanum</i> Greene	Strict blue-eye-grass	Iridaceae	NI	FAC
<i>Sisyrinchium septentrionale</i> Bickn.	Northern blue-eye-grass	Iridaceae	FACW+	—
<i>Sium suave</i> Walter	Hemlock water-parsnip	Apiaceae	OBL	OBL
<i>Smilacina racemosa</i> (L.) Desf.	Feather false-Solomon's-seal	Liliaceae	FAC-	FAC
<i>Smilax herbacea</i> L.	Smooth carrion-flower	Liliaceae	—	FAC
* <i>Solanum dulcamara</i> L.	Climbing nightshade	Solanaceae	FAC	—
<i>Solidago gigantea</i> AIT.	Giant goldenrod	Asteraceae	FACW-	FACW
* <i>Sonchus arvensis</i> L.	Field sowthistle	Asteraceae	FACU+	FAC
* <i>Sonchus asper</i> (L.) Hill	Prickly sow-thistle	Asteraceae	FAC-	FACW
<i>Sparganium androcladum</i> (Engelm.) Morong	Branching burreed	Sparganiaceae	OBL	NI
<i>Sparganium emersum</i> Rehm.	Narrow-leaf burreed	Sparganiaceae	OBL	OBL
<i>Sparganium eurycarpum</i> Gray	Giant burreed	Sparganiaceae	OBL	OBL
<i>Sparganium minimum</i> (Hartm.) Fr.	Small burreed	Sparganiaceae	OBL	—
<i>Spartina gracilis</i> Trin.	Alkali cordgrass	Poaceae	FACW	FACW
<i>Spartina pectinata</i> Link	Prairie cordgrass	Poaceae	OBL	FACW
<i>Spergularia marina</i> (L.) Griseb.	Saltmarsh sandspurry	Caryophyllaceae	OBL	OBL
<i>Sphenopholis intermedia</i> (Rydb.) Rydb.	Intermediate wedgegrass	Poaceae	—	—
<i>Sphenopholis obtusata</i> (Michx.) Scribn.	Prairie wedgegrass	Poaceae	FAC	FAC
<i>Spiraea douglasii</i> Hook.	Douglas' spiraea	Rosaceae	FACW	—
<i>Spiranthes romanzoffiana</i> Cham.	Hooded ladies' tresses	Orchidaceae	OBL	OBL
<i>Spirodela polyrhiza</i> (L.) Schleid.	Greater duckweed	Lemnaceae	OBL	OBL
<i>Sporobolus airoides</i> (Torr.) Torr.	Alkali sacaton	Poaceae	FAC-	FAC
<i>Stachys palustris</i> L.	Marsh hedgenettle	Lamiaceae	FACW+	OBL
<i>Stellaria calycantha</i> (Ledeb.) Bong.	Northern starwort	Caryophyllaceae	FACW+	—
<i>Stellaria crassifolia</i> Ehrh.	Fleshy starwort	Caryophyllaceae	FACW	OBL
<i>Stellaria crispa</i> Cham. & Sslecht.	Crisp starwort	Caryophyllaceae	FAC+	—
<i>Stellaria longifolia</i> Willd.	Long-leaf starwort	Caryophyllaceae	FACW	FACW
<i>Stellaria longipes</i> Goldie	Long-stalk starwort	Caryophyllaceae	FACW-	OBL
<i>Stellaria monantha</i> Hulten	One-flower starwort	Caryophyllaceae	FAC	—
<i>Stellaria obtusa</i> Engelm.	Blunt starwort	Caryophyllaceae	FACW	—
<i>Stellaria simcoei</i> (Howell) Hitchc.	Wetland starwort	Caryophyllaceae	FACW-	—
<i>Stellaria sitchana</i> Steud.	Sitka starwort	Caryophyllaceae	FACW-	—
<i>Stellaria umbellata</i> Karel. & Kir.	Umbellate starwort	Caryophyllaceae	FAC+	—
<i>Stenanthium occidentale</i> Gray	Western feather-bells	Liliaceae	FACW	—
<i>Streptopus amplexifolius</i> (L.) DC.	Clasp-leaf twisted-stalk	Liliaceae	FAC-	OBL

Appendix A: Wetland Plants Occurring in Montana

Scientific name	Common name	Family	Reg. 9	Reg. 4
<i>Suaeda depressa</i> (Pursh) Wats.	Pursh seepweed	Chenopodiaceae	FACW-	FACW
<i>Suaeda intermedia</i> Wats.	Alkali seepweed	Chenopodiaceae	FAC	FACU
<i>Suaeda nigra</i> (Raf.) Macbr.	Black seepweed	Chenopodiaceae	FACW	---
<i>Suaeda occidentalis</i> Wats.	Western seepweed	Chenopodiaceae	FACW	---
<i>Suckleya suckleyana</i> (Torr.) Rydb.	Poison suckleya	Chenopodiaceae	FACW	OBL
<i>Suksdorfia ranunculifolia</i> (Hook.) Engl.	Buttercup-leaf suksdorfia	Saxifragaceae	FAC	---
<i>Suksdorfia violacea</i> Gray	Violet suksdorfia	Saxifragaceae	FAC	---
<i>Swertia perennis</i> L.	Felwort	Gentianaceae	FACW	---
* <i>Tamarix ramosissima</i> Ledeb.	Saltcedar	Tamarixaceae	FACW	FACW
<i>Teucrium canadense</i> L.	American germander	Lamiaceae	FAC+	FACW
<i>Thalictrum alpinum</i> L.	Alpine meadow-rue	Ranunculaceae	FACW-	---
<i>Thalictrum dasycarpum</i> Fisch. & Ave-Lall.	Purple meadow-rue	Ranunculaceae	FACW	FAC
<i>Thalictrum sparsiflorum</i> Fisch. & Mey.	Few-flower meadow-rue	Ranunculaceae	FAC	---
<i>Thelypodium integrifolium</i> (Nutt.) Endl.	Entire-leaf thelypody	Brassicaceae	FACW	FACW
<i>Thermopsis montana</i> Nutt.	Mountain golden pea	Fabaceae	---	---
<i>Thuja plicata</i> Don	Western red-cedar	Cupressaceae	FAC	---
<i>Tofieldia glutinosa</i> (Michx.) Pers.	Sticky false-asphodel	Liliaceae	OBL	---
<i>Toxicodendron rydbergii</i> (Rydb.) Greene	Rydberg poison ivy	Anacardiaceae	FACW-	FACU
<i>Tradescantia occidentalis</i> (Britt.) Smyth	Prairie spider-wort	Commelinaceae	FACW	---
<i>Trautvetteria caroliniensis</i> (Walt.) Vail	Carolina tassel-rue	Ranunculaceae	FAC	---
<i>Tribulus terrestris</i> L.	Puncture vine	Zygophyllaceae	---	---
<i>Trifolium beckwithii</i> Wats.	Beckwith's clover	Fabaceae	FAC	FAC+
<i>Trifolium cyathiferum</i> Lindl.	Cup clover	Fabaceae	FAC	---
* <i>Trifolium fragiferum</i> L.	Strawberry clover	Fabaceae	FACU	FAC
<i>Trifolium microcephalum</i> Pursh	Small-head clover	Fabaceae	FAC	---
<i>Trifolium parryi</i> Gray	Parry's clover	Fabaceae	FAC	---
<i>Triglochin concinnum</i> Davy	Utah arrow-grass	Juncaginaceae	OBL	OBL
<i>Triglochin maritimum</i> L.	Seaside arrow-grass	Juncaginaceae	OBL	OBL
<i>Triglochin palustre</i> L.	Marsh arrow-grass	Juncaginaceae	OBL	OBL
<i>Triodanis perfoliata</i> (L.) Nieuwl.	Venus'-looking-glass	Campanulaceae	---	FAC
<i>Trollius laxus</i> Salisb.	American globeflower	Ranunculaceae	OBL	---
<i>Typha angustifolia</i> L.	Narrow-leaf cattail	Typhaceae	OBL	OBL
<i>Typha latifolia</i> L.	Broad-leaf cattail	Typhaceae	OBL	OBL
<i>Ulmus americana</i> L.	American elm	Ulmaceae	---	FAC
<i>Urtica dioica</i> L.	Stinging nettle	Urticaceae	FAC+	FACW
<i>Utricularia intermedia</i> Hayne	Flat-leaf bladderwort	Lentibulariaceae	OBL	OBL
<i>Utricularia minor</i> L.	Lesser bladderwort	Lentibulariaceae	OBL	OBL
<i>Vaccinium occidentale</i> Gray	Western huckleberry	Ericaceae	FAC+	---
<i>Vahlodea atropurpurea</i> (Wahl.) Fr.	Mountain hairgrass	Poaceae	FACW-	---
<i>Valeriana acutiloba</i> Rydb.	Sharp-leaf valerian	Valerianaceae	NI	FAC
<i>Valeriana dioica</i> L.	Marsh valerian	Valerianaceae	FACW	FACW-
<i>Valeriana edulis</i> T. & G.	Edible valerian	Valerianaceae	FAC	FAC
<i>Valeriana occidentalis</i> Heller	Western valerian	Valerianaceae	FAC	---
<i>Valeriana sitchensis</i> Bong.	Sitka valerian	Valerianaceae	FAC	---
<i>Veratrum californicum</i> Durand	California false-hellebore	Liliaceae	FACW+	---
<i>Veratrum viride</i> Ait.	American false-hellebore	Liliaceae	OBL	---
<i>Verbena hastata</i> L.	Blue vervain	Verbenaceae	FAC+	FACW
<i>Veronica americana</i> Benth.	American speedwell	Scrophulariaceae	OBL	OBL
<i>Veronica anagallis-aquatica</i> L.	Water speedwell	Scrophulariaceae	OBL	OBL
<i>Veronica catenata</i> Pennell	Pink water speedwell	Scrophulariaceae	OBL	OBL
<i>Veronica cusickii</i> Gray	Cusick's speedwell	Scrophulariaceae	FACW	---
<i>Veronica peregrina</i> L.	Pursslane speedwell	Scrophulariaceae	OBL	FACW
<i>Veronica scutellata</i> L.	Marsh speedwell	Scrophulariaceae	OBL	OBL
<i>Veronica serpyllifolia</i> L.	Thyme-leaf speedwell	Scrophulariaceae	FAC	OBL

Appendix A: Wetland Plants Occurring in Montana

Scientific name	Common name	Family	Reg. 9	Reg. 4
<i>Veronica wormskjoldii</i> Roem. & Schultes	American alpine speedwell	Scrophulariaceae	FAC+	---
<i>Viburnum edule</i> (Michx.) Raf.	Squashberry	Caprifoliaceae	FACW	FACW
<i>Viola adunca</i> Smith	Hooked-spur violet	Violaceae	FAC	FACU
<i>Viola glabella</i> Nutt.	Smooth yellow violet	Violaceae	FACW+	---
<i>Viola macloskeyi</i> Lloyd	Small white violet	Violaceae	OBL	---
<i>Viola nephrophylla</i> Greene	Northern bog violet	Violaceae	FACW	FACW
<i>Viola palustris</i> L.	Marsh violet	Violaceae	OBL	---
<i>Viola renifolia</i> Gray	Kidney-leaf white violet	Violaceae	FACW	FACW
<i>Vitis riparia</i> Michx.	River-bank grape	Vitaceae	---	FAC
<i>Wolffia columbiana</i> Karst.	Columbia water-meal	Lemnaceae	OBL	OBL
<i>Wolffia punctata</i> Griseb.	Dotted water-meal	Lemnaceae	OBL	---
<i>Wyethia helianthoides</i> Nutt.	White-head mule's-ears	Asteraceae	FACW	---
<i>Xanthium strumarium</i> L.	Rough cocklebur	Asteraceae	FAC	FAC
<i>Zannichellia palustris</i> L.	Horned pondweed	Zannicheliaceae	OBL	OBL
<i>Zigadenus elegans</i> Pursh	Mountain death-camas	Liliaceae	FAC+	---
<i>Zigadenus venenosus</i> Wats.	Meadow death-camas	Liliaceae	FAC	FAC
<i>Zizania aquatica</i> L.	Annual wild rice	Poaceae	OBL	OBL
<i>Zizia aptera</i> (Gray) Fern.	Heart-leaf alexanders	Apiaceae	FAC+	FACW-

Appendix B

Partial list of synonyms for scientific names

Synonym	USFWS name
<i>Adiantum aleuticum</i> (Rupr.) Paris	<i>Adiantum pedatum</i>
<i>Agrostis humilis</i> Vasey	<i>Podagrostis humilis</i>
<i>Agrostis thurberiana</i> Hitchc.	<i>Podagrostis thurberiana</i>
<i>Allium columbianum</i> (O. & M.) Peters. et al	<i>Allium douglasii</i>
<i>Alnus viridis</i> (Chaix) DC.	<i>Alnus sinuata</i>
<i>Arenaria lateriflora</i> L.	<i>Moehringia lateriflora</i>
<i>Arenaria rubella</i> (Wahl.) Smith	<i>Minuartia rubella</i>
<i>Aster ascendens</i> Lindl.	<i>Aster chilensis</i>
<i>Calamagrostis stricta</i> (Timm) Koeler	<i>Calamagrostis inexpansa</i> , <i>C. neglecta</i>
<i>Carex atosquama</i> Mack.	<i>Carex atrata</i>
<i>Carex dioica</i> L.	<i>Carex gynocrates</i>
<i>Carex lachenalii</i> Schkuhr.	<i>Carex bipartita</i>
<i>Carex muricata</i> L.	<i>Carex echinata</i>
<i>Carex oederi</i> Retz.	<i>Carex viridula</i>
<i>Carex parryana</i> idahoa (Bailey) Murray	<i>Carex idahoa</i>
<i>Carex pellita</i> Willd.	<i>Carex lanuginosa</i>
<i>Carex utriculata</i> Boott	<i>Carex rostrata</i>
<i>Chamerion angustifolium</i> (L.) Hol.	<i>Epilobium angustifolium</i>
<i>Chamerion latifolium</i> (L.) Holub.	<i>Epilobium latifolium</i>
<i>Deschampsia atropurpurea</i> (Wahl.) Scheele	<i>Vahlodea atropurpurea</i>
<i>Diphasiastrum alpinum</i> (L.) Holub.	<i>Lycopodium alpinum</i>
<i>Diphasiastrum complanatum</i> (L.) Hol.	<i>Lycopodium complanatum</i>
<i>Elymus trachycaulus</i> (Link.) Shinn.	<i>Agropyron trachycaulum</i>
<i>Elymus repens</i> (L.) Gould	<i>Agropyron repens</i>
<i>Elytrigia repens</i> (L.) Nevski	<i>Agropyron repens</i>
<i>Eupatorium maculatum</i> L.	<i>Eupatoriadelphus maculatus</i>
<i>Gentiana amarella</i> L.	<i>Gentianella amarella</i>
<i>Gentiana detonsa</i> Rottb.	<i>Gentianopsis detonsa</i>
<i>Gentiana propinqua</i> Richardson	<i>Gentianella propinqua</i>
<i>Gentiana simplex</i> Gray	<i>Gentianopsis simplex</i>
<i>Gentiana tenella</i> Rottb.	<i>Gentianella tenella</i>
<i>Gymnocarpium disjunctum</i> (Rupr.) Ching.	<i>Gymnocarpium dryopteris</i>
<i>Habenaria dilatata</i> (Pursh) Hook.	<i>Platanthera dilatata</i>
<i>Habenaria hyperborea</i> (L.) R.Br.	<i>Platanthera hyperborea</i>
<i>Habenaria obtusata</i> (Pursh) Rich.	<i>Platanthera obtusata</i>
<i>Habenaria orbiculata</i> (Pursh) Torr.	<i>Platanthera orbiculata</i>
<i>Habenaria unalascensis</i> (Spr.) Wats.	<i>Piperia unalascensis</i>
<i>Habenaria viridis</i> (L.) R.Br.	<i>Coeloglossum viride</i>
<i>Juncus albescens</i> (Lange) Fern.	<i>Juncus triglumis</i>
<i>Kalmia occidentalis</i> Small	<i>Kalmia polifolia</i>
<i>Luzula piperi</i> (Cov.) Jones	<i>Luzula wahlenbergii</i>
<i>Lychnis apetala</i> L.	<i>Silene uralensis</i>
<i>Lycopodiella inundata</i> (L.) Holub.	<i>Lycopodium inundatum</i>
<i>Moneses uniflora</i> (L.) Gray	<i>Pyrola uniflora</i>

Appendix B: Partial List of Synonyms

Synonym	USFWS name
Montia perfoliata (Donn) Howell	Claytonia perfoliata
Montia sibirica (L.) Howell	Claytonia sibirica
Myosotis alpestris (Schmidt	Myosotis sylvatica
Myriophyllum exalbescens Fern.	Myriophyllum spicatum v. exalbescens
Nuphar polysepalum Engelm.	Nuphar luteum
Nuphar variegatum Engelm.	Nuphar luteum
Oenothera subacaulis (Pursh) Garr.	Camissonia subacaulis
Ophioglossum pusillum Raf.	Ophioglossum vulgatum
Orchis rotundifolia Pursh	Amerorchis rotundifolia
Pentaphylloides fruticosa (L.) Schw.	Potentilla fruticosa
Pentaphylloides floribunda (Pursh) Love	Potentilla fruticosa
Polygonum coccineum Muhl.	Polygonum amphibium
Populus tremuloides Michx.	Populus tremula
Populus trichocarpa Hook.	Populus balsamifera
Phragmites communis Trin.	Phragmites communis
Rhus radicans L.	Toxicodendron rydbergii
Rorippa islandica (Oeder) Borbas	Rorippa palustris
Salix myrtilifolia Anderss.	Salix boothii
Salix phlyicifolia L.	Salix planifolia
Saxifraga odontoloma Piper	Saxifraga arguta
Saxifraga subapetala Nelson	Saxifraga oregana
Sisyrinchium angustifolium Mill.	Sisyrinchium montanum, S. idahoense
Solidago graminifolia (L.) Salisb.	Euthamia graminifolia
Solidago occidentalis (Nutt.) T. & G.	Euthamia occidentalis

USFWS name	Synonym
Adiantum pedatum	Adiantum aleuticum (Rupr.) Paris
Agropyron repens	Elymus repens (L.) Gould
Agropyron repens	Elytrigia repens (L.) Nevski
Agropyron trachycaulum	Elymus trachycaulus (Link.) Shinn.
Allium douglasii	Allium columbianum (O. & M.) Peters. et al
Alnus sinuata	Alnus viridis (Chaix) DC.
Amerorchis rotundifolia	Orchis rotundifolia Pursh
Aster chilensis	Aster ascendens Lindl.
Calamagrostis neglecta	Calamagrostis stricta (Timm) Koeler
Calamagrostis inexpansa	Calamagrostis stricta (Timm) Koeler
Camissonia subacaulis	Oenothera subacaulis (Pursh) Garr.
Carex lanuginosa	Carex pellita Willd.
Carex idahoa	Carex parryana Dewey ssp. idahoa
Carex rostrata	Carex utriculata Boott
Carex bipartita	Carex lachenalii Schkuhr
Carex echinata	Carex muricata L.
Carex gynocrates	Carex dioica L.
Carex atrata	Carex atosquama Mack.
Carex viridula	Carex oederi Retz.
Claytonia perfoliata	Montia perfoliata (Donn) Howell
Claytonia sibirica	Montia sibirica (L.) Howell
Coeloglossum viride	Habenaria viridis (L.) R.Br.

USFWS name	Synonym
Epilobium latifolium	Chamerion latifolium (L.) Holub.
Epilobium angustifolium	Chamerion angustifolium (L.) Hol.
Eupatoriadelphus maculatus	Eupatorium maculatum L.
Euthamia graminifolia	Solidago graminifolia (L.) Salisb.
Euthamia occidentalis	Solidago occidentalis (Nutt.) T.& G.
Gentianella tenella	Gentiana tenella Rottb.
Gentianella amarella	Gentiana amarella L.
Gentianella propinqua	Gentiana propinqua Richardson
Gentianopsis simplex	Gentiana simplex Gray
Gentianopsis detonsa	Gentiana detonsa Rottb.
Gymnocarpium dryopteris	Gymnocarpium disjunctum (Rupr.) Ching.
Juncus triglumis	Juncus albescens (Lange) Fern.
Kalmia polifolia	Kalmia occidentalis Small
Luzula wahlenbergii	Luzula piperi (Cov.) Jones
Lycopodium complanatum	Diphasiastrum complanatum (L.) Hol.
Lycopodium inundatum	Lycopodiella inundata (L.) Holub.
Lycopodium alpinum	Diphasiastrum alpinum (L.) Holub.
Minuartia rubella	Arenaria rubella (Wahl.) Smith
Moehringia lateriflora	Arenaria lateriflora L.
Myosotis sylvatica	Myosotis alpestris (Schmidt
Myriophyllum spicatum exalbescens	Myriophyllum exalbescens Fern.
Nuphar luteum	Nuphar variegatum Engelm.
Nuphar luteum	Nuphar polysepalum Engelm.
Ophioglossum vulgatum	Ophioglossum pusillum Raf.
Phragmites communis	Phragmites communis Trin.
Piperia unalascensis	Habenaria unalascensis (Spr.) Wats.
Platanthera dilatata	Habenaria dilatata (Pursh) Hook.
Platanthera hyperborea	Habenaria hyperborea (L.) R.Br.
Platanthera obtusata	Habenaria obtusata (Pursh) Rich.
Platanthera orbiculata	Habenaria orbiculata (Pursh) Torr.
Podagrostis humilis	Agrostis humilis Vasey
Podagrostis thurberiana	Agrostis thurberiana Hitchc.
Polygonum amphibium	Polygonum coccineum Muhl.
Populus balsamifera	Populus trichocarpa Hook.
Populus tremula	Populus tremuloides Michx.
Potentilla fruticosa	Pentaphylloides floribunda (Pursh) Love
Potentilla fruticosa	Pentaphylloides fruticosa (L.) Schw.
Pyrola uniflora	Moneses uniflora (L.) Gray
Rorippa palustris	Rorippa islandica (Oeder) Borbas
Salix boothii	Salix myrtillifolia Anderss.
Salix planifolia	Salix phylicifolia L.
Saxifraga arguta	Saxifraga odontoloma Piper
Saxifraga oregana	Saxifraga subapetala Nelson
Silene uralensis	Lychnis apetala L.
Sisyrinchium montanum,	Sisyrinchium angustifolium Mill.
Sisyrinchium idahoense	Sisyrinchium angustifolium Mill.

Appendix C

Species of Special Concern. The following wetland indicators are listed as plant species of special concern by the Montana Natural Heritage Program (2000 list).

<i>Adoxa moschatellina</i>	<i>Heterocodon rariflorum</i>	<i>Teucrium canadense</i>
<i>Allium columbianum</i>	<i>Howellia aquatilis</i>	<i>Thalictrum alpinum</i>
<i>Amerorchis rotundifolia</i>	<i>Juncus acuminatus</i>	<i>Trifolium cyathiferum</i>
<i>Ammannia coccinea</i>	<i>Juncus albescens</i>	<i>Utricularia intermedia</i>
<i>Asclepias incarnata</i>	<i>Juncus covillei</i>	<i>Veratrum californicum</i>
<i>Aster frondosus</i>	<i>Juncus hallii</i>	<i>Viola renifolia</i>
<i>Atriplex truncata</i>	<i>Kalmia polifolia</i>	<i>Wolffia columbiana</i>
<i>Bacopa rotundifolia</i>	<i>Lilaea scilloides</i>	
<i>Brasenia schreberi</i>	<i>Liparis loeselii</i>	
<i>Carex amplifolia</i>	<i>Lobelia spicata</i>	
<i>Carex chordorrhiza</i>	<i>Lomatogonium rotatum</i>	
<i>Carex crawei</i>	<i>Lycopodium inundatum</i>	
<i>Carex livida</i>	<i>Mertensia bella</i>	
<i>Carex idahoensis</i>	<i>Mimulus breviflorus</i>	
<i>Carex paupercula</i>	<i>Mimulus primuloides</i>	
<i>Carex prairea</i>	<i>Najas guadalupensis</i>	
<i>Carex scoparia</i>	<i>Nymphaea tetragona</i>	
<i>Carex sychnocephala</i>	<i>Ophioglossum vulgatum</i>	
<i>Castilleja exilis</i>	<i>Petasites frigidus</i>	
<i>Centaureum exaltatum</i>	<i>Phippsia algida</i>	
<i>Centunculus minimus</i>	<i>Plagiobothrys leptocladus</i>	
<i>Chrysosplenium tetrandrum</i>	<i>Potamogeton obtusifolius</i>	
<i>Cyperus acuminatus</i>	<i>Primula incana</i>	
<i>Cyperus erythrorhizos</i>	<i>Ranunculus cardiophyllus</i>	
<i>Cyperus rivularis</i>	<i>Ranunculus hyperboreus</i>	
<i>Cyperus schweinitzii</i>	<i>Ranunculus jovis</i>	
<i>Cypripedium calceolus</i>	<i>Ranunculus orthorhynchus</i>	
<i>Cypripedium fasciculatum</i>	<i>Ranunculus pedatifidus</i>	
<i>Cypripedium passerinum</i>	<i>Ranunculus verecundus</i>	
<i>Cystopteris montana</i>	<i>Ribes triste</i>	
<i>Downingia laeta</i>	<i>Rorippa calycina</i>	
<i>Drosera anglica</i>	<i>Rotala ramosior</i>	
<i>Dryopteris cristata</i>	<i>Salix barrattiana</i>	
<i>Elatine californica</i>	<i>Salix serissima</i>	
<i>Eleocharis rostellata</i>	<i>Scheuchzeria palustris</i>	
<i>Elodea longivaginata</i>	<i>Scirpus cespitosus</i>	
<i>Epipactis gigantea</i>	<i>Scirpus heterochaetus</i>	
<i>Erigeron formosissimus</i>	<i>Scirpus subterminalis</i>	
<i>Eriophorum gracile</i>	<i>Selaginella selaginoides</i>	
<i>Eupatoriadelphus maculatus</i>	<i>Senecio eremophilus</i>	
<i>Eustoma grandiflorum</i>	<i>Senecio pauciflorus</i>	
<i>Gentiana glauca</i>	<i>Sidalcea oregana</i>	
<i>Gentianopsis simplex</i>	<i>Sisyrinchium septentrionale</i>	
<i>Gratiola ebracteata</i>	<i>Sphenopholis intermedia</i>	
<i>Grindellia howellii</i>	<i>Suckleya suckleyana</i>	

Notes

